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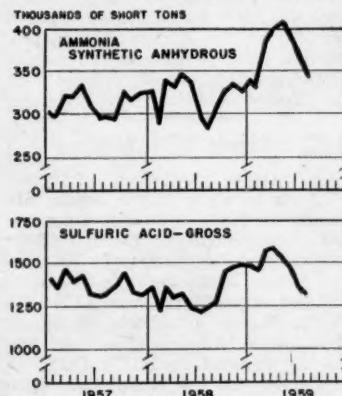
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No. 44

Inorganic Chemical Production Higher In August, 1959

Commerce Department's Monthly Report Shows General Output Rise

WASHINGTON—Production levels for inorganic chemicals in the U.S. during August, 1959, were generally higher than those reported for July.



1959 and for the corresponding month in 1958, reported the bureau of the (Turn to CHEMICALS, page 5)

NAC Assn. Speakers Voice Optimism, Urge Better Promotion, Advertising

FRENCH LICK, IND.—A panel on pesticides and wildlife; two talks on sales, marketing, advertising and promotion of pesticides; discussions on the 1959 amendment to Federal legislation and a report on world developments in pest control were featured at the 26th annual meeting of the National Agricultural Chemicals Assn. at French Lick, Ind., Oct. 21-23. The meeting, with headquarters at the Sheraton-French Lick Hotel, attracted some 400 persons from a broad segment of the pesticide industry.

Jackson V. Vernon, vice president,

Food Machinery and Chemical Corp., New York, NAC president, sounded the keynote of the meeting in his opening address, asserting that American agriculture and the public in general are being seriously harmed by what he called "unwarranted attacks" by some wildlife groups, conservation groups, organic farmers and various other food faddists. When spokesmen and publicists for these critics enter the field of agricultural pesticides, too often they substitute zeal for judgment and noise for knowledge, Mr. Vernon declared.

We must "move positively to

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Wildlife Panel Presents Pros And Cons of Pesticide Sprays

FRENCH LICK, IND.—A panel discussion on pesticides and wildlife at the 26th annual convention of the National Agricultural Chemicals Assn. here Oct. 21 brought out a number of viewpoints, impressions and suggestions concerning the value of pesticides as against their effect on fish, birds and other wildlife. Moderated by Jack Dreessen of the NAC

Assn. staff, the panel was composed of four speakers representing the U.S. Fish and Wildlife Service; the National Wildlife Federation; the University of Arkansas and the Entomology Research Division of the U.S. Department of Agriculture.

Walter W. Dykstra, staff research assistant in the wildlife research branch of the U.S. Fish and Wildlife Service, told the convention that a major portion of his group's current research efforts is focused on determining acute and chronic toxicity levels of pesticidal compounds to several representative species of birds. He reported that measurements are being taken of sublethal effects of pesticides upon growth and reproduction of birds and also to determine the mode of entry of toxic materials in wild animals.

He also told the group that the long-term effects of large-scale pesticide applications upon wild bird and mammal populations are being studied. These data will provide basic information on the acute and chronic toxicity levels of pesticidal materials to a few of the major forms of wild birds and mammals native to North America, he said. Such information may guide future pesticide formulations and application techniques to minimize any harmful side-effects on wildlife.

Mr. Dykstra said that the Fish and Wildlife Service does not oppose pest control operations unless they impose upon the Service's responsibility for the protection of fish and wildlife resources.

The Service takes the position that the need for pest control should (Turn to WILDLIFE, page 17)

The new federal amendment includes nematocides, plant regulators, defoliants and desiccants in the act. It was recalled that agreement among the state pesticide and fertilizer control associations, the National Plant Food Council and the National Agricultural Chemicals Assn., last year led to the inclusion of these materials in the federal act Aug. 7.

The AAPCO resolution recommends "that all states whose existing statutes do not include these materials, initiate efforts toward the amendment of those statutes to bring them into closer conformity with the model law and the federal statute, and to reflect therein these new classes of materials.

In his address, the out-going presi- (Turn to PESTICIDE, page 18)

CONVENTION COVERAGE

Covering the National Agricultural Chemicals Assn. meeting at French Lick, Ind., for Croplife were Lawrence A. Long, editor of Croplife, Minneapolis; and Amos W. Standish, Chicago office.

drive home the truth" about the importance of pesticide chemicals to the American public, Mr. Vernon said, for unless we do "we face undue restrictions on the manufacture, distribution, sale and application of our products. This would be harmful not alone to the industry but also to American agriculture and to the public generally."

The association "has made sincere efforts to develop among the wildlife people a better understanding of industry's responsibilities, and the vital role its products play in our total economy, and in advancing public health," he continued. "We have also agreed with the wildlife people that more research is desirable to determine in greater measure the effects of pesticides on wildlife." But, said Mr. Vernon, "attacks of some of the wildlife groups continue unabated."

"There can be no question of our interest or wish to cooperate with others in the areas of information and education on any problems affecting our industry and the public interest," he declared.

The president stated that the lack of industry statistics is another serious problem faced by the trade. This is a problem of long-standing, he said, and the paucity of information has handicapped the orderly operation of the industry for a long time. "In the

(Turn to NAC MEETING, page 20)

FDA Proposes to Change Heptachlor Residue Provisions

WASHINGTON—The Food and Drug Administration on Oct. 27 issued a proposal to rescind its present regulation on the use of heptachlor on certain food crops. This action, it said, would ban any amount of residue of heptachlor in or on foods shipped in interstate commerce.

Residues of one-tenth of one part per million are permitted on harvested fruit, vegetable, grain, and forage crops at present. FDA now proposes a zero tolerance for residues of the pesticide.

FDA claims new scientific data shows that an oxidation product of heptachlor—heptachlor epoxide—forms on crops, largely as a result of weathering. Residues of the epoxide on crops have heretofore gone undetected because the analytical method for detecting the product differs from that used to find heptachlor. FDA says its recent studies have shown such residues are likely to be present on crops, even though farmers follow official recommendations for application.

Epoxide residues are also deposited in meat and milk when forage containing the epoxide residue is fed to meat and dairy animals, FDA claims.

According to the animal test (Turn to page 6)

Opposition Voiced To Proposed Board For Control Regulation

FRESNO, CAL.—Representatives of three major agricultural chemical industrial groups in California testified before a California State Assembly Interim committee, meeting in Fresno recently, against a proposal to create a five-man industry board to regulate pest control application.

Wanda Branstetter, executive secretary of the Agricultural Aircraft Assn., Inc., and C. O. Barnard, executive secretary of the Western Agricultural Chemicals Assn., told the legislative committee that the present method of pest control is working well, and is sufficient. Mrs. Branstetter said there was no problem in the industry which indicated a need for such a board.

Gordon Mackersie, president of the Agricultural Pest Control Assn., composed principally of operators of ground rigs, testified that although it was a member of his own association who originally authored the bill in the 1959 session of the California State Legislature, his organization now opposed the measure and was asking for its withdrawal.

Opposition has also been registered by the California Farm Bureau Federation, and the California State Department of Agriculture.

Calspray Names Canadian Manager

RICHMOND, CAL.—The appointment of Virgil L. Goldman to the newly created position of manager of Ortho Agricultural Chemicals (Canada) Limited has been announced by A. W. Mohr, president of the parent company, California Spray-Chemical Corp.

In his new position, Mr. Goldman will be responsible for all phases of marketing and manufacturing of the Ortho line of insecticides, fungicides and weed killers in the Dominion of Canada. He will make his headquarters in the Toronto area at an early date.

For the past nine years, Mr. Goldman has been branch manager, Merchandising sales for northern California, Nevada and Hawaii. A native of Oakland, Cal., he received his B.S. degree in business administration from St. Mary's College in Moraga, Cal.



James P. Flavin

FIELD REPRESENTATIVE—James P. Flavin has been appointed field research representative for the south central states by Chemagro Corp., Kansas City, Mo. Mr. Flavin joined Chemagro in 1955 and has been assigned to the product development section since that time. He is a graduate of the University of Florida with a Master of Science degree.



NPFI PRESENTS SCROLL—Ray L. King (right), president and general manager of the Georgia Fertilizer Co., Valdosta, was honored at the recent Southeastern Fertilizer Conference in Atlanta, when he was presented a scroll in recognition of his leadership and contributions in the field of agriculture, to the fertilizer industry and to the National Plant Food Institute. The scroll, authorized by the board of directors of NPFI, of which he was a former member, was presented by Dr. Russell Coleman, executive vice president of NPFI.

Angular Leaf Spot Called Cotton's Worst Enemy in Southwest

STANTON, TEXAS—Cotton's most deadly enemy in the Southwest may not be the boll worm or cabbage looper or fleahopper, but the fungus disease, angular leaf spot. Authorities in various sections estimate the 1959 crop yield was lowered from 10 to 25% because of this blight.

One entomologist, Gerald Hanson, former county agricultural agent and now part owner of a farm chemical company, says the blight resistant strains developed a few years ago are no longer immune to the fungus.

"Damage was quite severe this season," he said. "But there was nothing we could do about it. Some farmers tried to control it with regular insecticides but without success. So far as we know, there is no chemical that will stop angular leaf spot."

Mr. Hanson says there are now five known races or strains of the leaf spot, and that the resistant strains of cotton will take care of only about two of them. As quickly as cotton breeders develop a plant that is immune, another type of fungus takes over.

"Insects can be controlled," said the former county agent, "but the big problem confronting growers is blight. The tiny organisms of the soil are also causing trouble, and they too are most difficult to control. Right now we need a lot of research on these two problems, because they are getting worse each year."

Warren D. Roth Named Merck Representative

RAHWAY, N.J.—Warren D. Roth has been named a southwestern U.S. general products sales representative for Merck Chemical Division. He will serve southern California, Arizona, New Mexico, and western Texas, according to Richard W. Hayes, director of marketing for Merck general products at Rahway, N.J.

Mr. Roth, a native of Philadelphia, Pa., will report to Arthur C. Dodds, senior sales representative for Merck general products in San Francisco. He attended the University of Pennsylvania, Philadelphia, and Idaho State College where he received his bachelor of science in pharmacy and chemistry. Mr. Roth is a registered pharmacist.

Monsanto Announces Sales Personnel Changes

ST. LOUIS—Several changes in the agricultural chemicals sales organization of Monsanto Chemical Co.'s inorganic chemicals division were announced by James E. Crawford, division director of marketing.

Stewart D. Daniels of St. Louis, technical service manager for feed and fertilizers, becomes product manager, nitrogen chemicals.

John S. Moore, Jr., who has been a salesman stationed at Denver, becomes product supervisor of ammonium nitrate and urea with headquarters at St. Louis. Reporting to him will be Beal Hargrove, supervisor for agricultural nitrogen products and N. L. Reding, supervisor for industrial nitrogen products.

Ben W. Martin, a salesman stationed at Los Angeles, becomes product supervisor of anhydrous ammonia, nitrogen solutions and nitric acid with headquarters at St. Louis. Reporting to him will be A. B. Bradley, supervisor for direct application materials.

John C. Docter of St. Louis, associate manager for direct applications, becomes customer service manager for agricultural chemicals. Reporting to him will be R. W. Goldthwaite and T. C. Welch, supervisors.

W. R. Bone of St. Louis, manager of nitrogen products, becomes technical service manager for agricultural chemicals.

Joseph W. Tripp, who has been a member of the sales group at St. Louis, joins the Los Angeles district sales office.

Roger L. Weinheimer, sales representative at Detroit, goes to Denver.

George L. Innes Named as Development Director

SAINT LOUIS, MICH.—Michigan Chemical Corp. has announced appointment of George L. Innes as director of sales and development. He is presently manager of the chemical sales and development division of Climax-Molybdenum Co., New York. In his new position, he will be in complete charge of Michigan's chemical sales and market development activities.

A graduate of Harvard University, Class of 1938, with a degree in chemistry, Mr. Innes has had wide research, market development and sales experience in the chemical and chemical processing industries.

Texans Announce New Fertilizer Program

LUBBOCK, TEXAS—The Texas Agricultural Extension Service has announced a new intensified fertilizer program to increase net profits through proper fertilizer use.

Three areas have been selected where an all-out effort will be made to "fertilize the way it should be used," according to John E. Hutchinson, director. These areas include Hale, Lubbock, Lamb and Terry counties on the South Plains. A second site will be in several northeast Texas counties, and a third series of location near the Gulf Coast.

The program will be supervised by the Texas Agricultural Extension Service, but members of the county extension program building committee and Texas Plant Food Educational Society will assist in planning the program.

Support for the work will also come from the Texas Agricultural Limestone Assn., the National Plant Food Institute and the American Potash Institute.

Initial work in the pilot areas is planned for the 1960 crop season, Mr. Hutchinson pointed out. The first step will be to take soil samples of these areas in order to determine the kinds and amounts of fertilizer and limestone needed.

The use of fertilizer has increased steadily in Texas. It has increased from 492,541 tons in 1949 to 672,210 tons during the 1958-59 crop season. The potential profits resulting from fertilizer still have not been reached, the director said.

IMC Spends \$14 Million

CHICAGO—International Minerals & Chemical Corp. spent nearly \$14 million for plant additions, expansion and improvement in fiscal 1958-59, according to the company's 50th annual report issued recently.

Major expenditures were \$2,786,953 at the Bonnie phosphate chemicals plant, near Mulberry, Fla., and \$6,658,792 supplied to IMC's Canadian subsidiary toward completion of a new potash mine near Esterhazy, Saskatchewan.

The five-year expansion program completed this year at Bonnie has doubled the plant's production, which amounted to \$20 million in 1958-59 sales.



Dr. Charles R. Hunt

JOINS GEIGY—Dr. Charles R. Hunt has joined Geigy Agricultural Chemicals, division of Geigy Chemical Corp., Ardsley, N.Y. Dr. Hunt will work for the research department as technical field representative in Montana, North and South Dakota, Wyoming, Minnesota, Iowa, Nebraska, Kansas and Colorado. Dr. Hunt is a native of Montana. He graduated from Montana State College, did graduate work in entomology at Washington State College, and obtained his doctorate from Cornell University.

Quality Tobacco with Chemical Nitrogen

DR. VINCENT SAUCHELLI

Chemical Technologist

Nat'l Plant Food Institute, Washington, D.C.

"Fertilizers high in organic nitrogen of plant or animal origin are not necessary for the production of a high yield of good quality tobacco."

This positive statement appears in Bulletin 613 of the Connecticut Agricultural Station issued early this year. It is extraordinary in many ways. For upward of 65 years this station has carried out field tests on the fertilization of tobacco. During this period and up to the issuance of this bulletin most growers and particularly buyers of Connecticut Valley tobacco had insisted that organic nitrogen materials should be exclusively used in their tobacco fertilizer formulations.

Expensive oil seed meals—cotton seed meal preferably—were specified as the sole suppliers of fertilizer nitrogen because only such were capable of producing the required quality. This same attitude had at one time been shared by the tobacco growers in other tobacco areas of the country and in Canada, but gradually they accepted less expensive forms represented by the inorganic, water-soluble nitrogen salts.

The Connecticut Valley growers held strongly to their convictions until the advent of the cheaper synthetic cigar binder. As usual, in all similar situations the force of economics dictates the means. Organic nitrogen fertilizers are too expensive. Premiums for certain alleged qualities in binder type tobacco could no longer be paid once synthetic binder was accepted by the cigar trade. The cost of producing such tobacco had to be reduced. Oil seed meals and other high-cost organics became casualties.

What has happened in the Connecticut Valley tobacco areas is merely a repetition (though long delayed) of the history of organic materials used in the fertilizer industry. Up until the first World War about 90% of the nitrogen used in the manufacture of commercial fertilizer mixtures was derived from organic sources. At present the total amount of organic nitrogen used in mixed goods in the U.S. averages about 4%. Chemical nitrogen materials in the form of ammonia, urea, ammonium nitrate, ammonium sulfate, cyanamide, sodium nitrate and nitrogen solutions comprise the chief sources. They are considerably less expensive per unit of nitrogen and completely satisfactory. The organic materials formerly used in fertilizers—oil seed meals, fish meal, dried blood, meat scrap—have gone to the livestock mill feed industry which could better afford to use them.

In the Southeast, flue-cured tobacco areas, the type of fertilizer used was for years that recommended by the Agronomy Tobacco Work Conference. This group continued to specify the use of water-insoluble nitrogen at first for one third, then one fourth, then one fifth of the total nitrogen in the mixture. Finally, the force of events and the careful experimental work at the North Carolina Agricultural Experiment Station, spearheaded by Dr. W. E. Colwell, cleared the way for the recommendation of an all water-soluble, nitrogen tobacco fertilizer for the region.

The response of the tobacco crop to the use of fertilizer is influenced by the soil type, its state of fertility, type of tobacco, weather and soil management practices. Connecticut Valley soils favored for

tobacco are sandy textured. This one factor, which favors leaching of nutrients in a period of heavy rainfall, was largely influential in the preference given to water insoluble nitrogen carriers.

In 1958 the Connecticut Agricultural Experiment Station in cooperation with selected tobacco farmers and the State Extension Service staff conducted a series of field experiments to determine the merits of the cheaper synthetic nitrogenous fertilizers when used in tobacco fertilizer mixtures. Most growers of outdoor and shade tobacco in 1958 used these cheaper fertilizers on a trial basis. The results of the official tests and the experience of most growers last year led the station authorities to issue Bulletin 623 (April, 1959) in which it is concluded that, at least

under the conditions of 1958, oil seed meals are not necessary as a nitrogen source for the production of a tobacco crop of high yield and quality. Water soluble sources, such as ammonia, nitrate and urea when supplemented by side-dressings or by less soluble synthetics such as urea-forms were practically as effective in the production of a crop as were the meals.

To the writer this statement is of particular satisfaction. For many years, prior to the appearance of these two bulletins from the Connecticut Station he had advocated the use of tobacco fertilizers formulated with water soluble nitrogenous materials to Connecticut Valley tobacco growers. The resistance to the acceptance of such fertilizers was adamant and was sustained primarily by the dictation of tobacco buyers. They were able to impose their views on the grower through the threat of penalties on the purchase price of the tobacco.

Dryland Farmers Up Cotton Yields with Fertilizer Applications

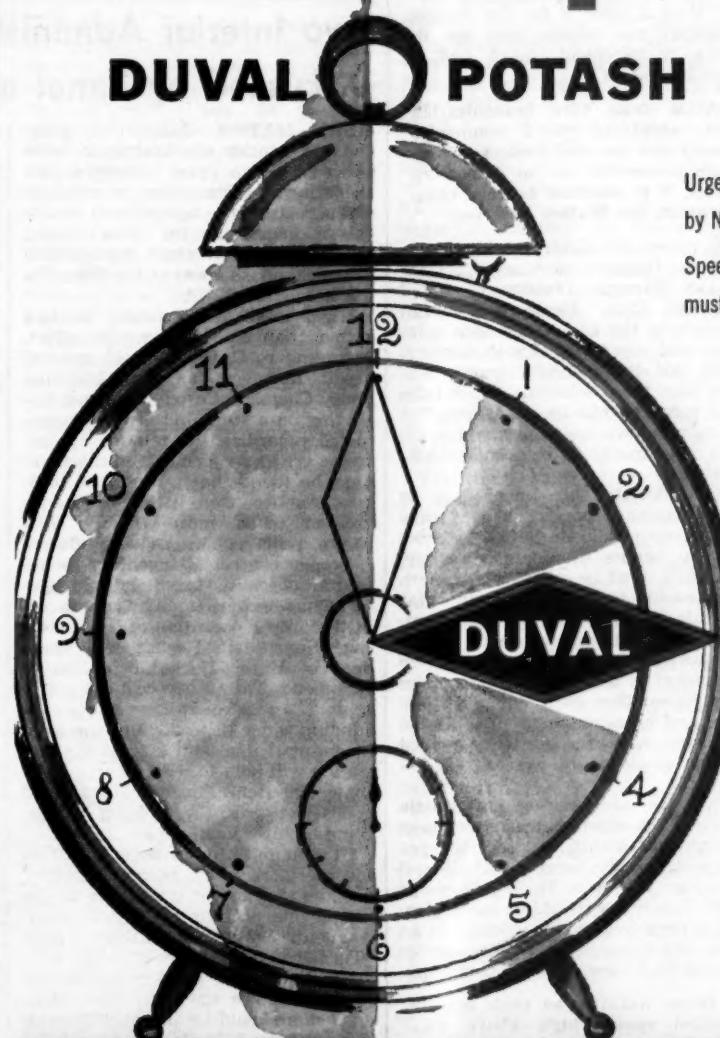
MIDLAND, TEXAS—Dryland farmers on the South Plains this year found that fertilizer increased cotton yields considerably. Heretofore the fertilization of dryland crops was a gamble. It paid off during wet years but did not increase yields during dry seasons.

Some farmers who used both nitrogen and phosphorus on their cotton this year are now harvesting a bale to the acre, which is much above average.

Irrigated cotton is likewise turning out better than expected, although angular leaf spot took a heavy toll. It was not so prevalent on dryland cotton, because the disease is spread by sprinkler irrigation water dripping from an infected leaf to start the blight on other parts of the stalk.

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Fertilizer Safety Group Stresses Teamwork for Effective Plant Program

By LAWRENCE A. LONG
Editor of Croplife

CHICAGO—Plant safety considerations from handling raw materials to shipping finished products were on the two-day agenda of the annual meeting of the Fertilizer Section of the National Safety Council here Oct. 19-20. The group named Elmer C. Perrine, Nitrogen Division, Allied Chemical Corp., New York, as chairman for 1960, to succeed George A. Pelton, Smith Agricultural Chemical Co., Columbus, Ohio. Ansell I. Raney, Phillips Chemical Co. was elected vice chairman to serve with Mr. Perrine. Secretary will be Gaither T. Newman, Smith-Douglass Co., Inc., Norfolk, Va.

In his presidential address, Mr. Pelton reported progress of the group during the past year, stating that the five regional safety schools held during the year have stimulated interest in safety throughout the industry, and that membership in the fertilizer section has shown an increase.

He reported that the section's executive committee had met three times during 1959 to formulate plans for the safety schools and other programs. Such meetings were conducted at Chicago, Atlanta, Ga., and Roanoke, Va.

Objectives of the fertilizer section include an effort to maintain and increase membership, to teach safety through supervisory personnel in plants, and to raise the general safety level throughout the industry. Mr. Pelton commended the fertilizer industry members for their efforts in this direction.

In a talk, "Look Below the Surface," William M. Cox, professor of industrial safety at Georgia Tech, Atlanta, told the assembly that it is dangerous to learn about safety by hearsay, since it is a subject that must be studied and achieved by doing. "There are no 'patent medicines' to bring about safety," he said, and the "hearsay" method of improving one's safety record is not entirely reliable.

The speaker recommended use of the "engineering approach" wherein clear-cut, logical analyses are made to get the facts; then build a safety team and solve the problems. Arrival at a quick and easy answer is not usually the best way to solve safety problems.

What ever plan is adopted, it should be flexible enough to fit the situation in the plant involved, large or small, he said.

So far as facts about safety in the industry are concerned, they are available from state reports on accident frequencies, injury reports, and severity data. Other information may be obtained through inspections, the National Safety Council, and state departments of labor. Much of this material from these sources is in raw form, however, and must be put into understandable shape so the supervisors may use it.

The safety committee alone can't prevent accidents nor can any single person. It is definitely a team job, he said, utilizing the talents of many. A pat on the back for work well done, a note in the local paper when the plant has achieved an unusual safety record, and similar acknowledgements of achievement all provide extra "push".

Specific safety problems should be tackled, rather than scattering the effort. Concentration of atten-

tion on specific objectives is usually effective. Among the areas where concentration might be well directed are in the prevention of falls by people; injury by machinery; and injuries caused by handling and lifting materials.

Albert E. Walker, regional supervisor of Travelers Insurance Co., discussed the topic, "Have We Forgotten Fundamentals?" He outlined basic foundation stones on which a safety program may be built:

1. A program must have the active interest and support of executives in the company. Management must give them the tools they need to operate such a program, such as in-plant means of communication, like a company paper or bulletin boards.

2. Analysis must be made of the cause of any accident. Reports of same should be written to be comprehended so the ideas contained therein may be used. The average accident report form is too legal-looking, Mr. Walker said. They should be revised so they tell the story simply.

3. Find a remedy for the trouble. Whatever the trouble may be, the safety management must find it, name it, and fix it.

Aside from the humanitarian side, accidents cost companies money and are bad business. Accident prevention is an important effort, it is essential to good management, Mr. Walker observed.

A paper by Emerson M. Jones, Midwest technical service supervisor of the Nitrogen Division of Allied Chemical Corp. discussed potential hazards in the use of nitrogen solutions, and how to avoid such dangers.

He told the fertilizer trade audience that these solutions, if not handled properly, can be dangerous, but by using known techniques and available equipment, it can be handled safely.

Still, despite this knowledge, he said, accidents persist. This means that many people in plants do know how to handle the material safely, but there must be others who do not. The trouble is, he pointed out, that much is said about safety equipment, but little has been done about it. The only way to be certain that protective equipment is being used, is to make it a policy that such equipment be used and/or maintained in a usable condition with responsibility placed on the employee to whom it is assigned.

Nitrogen solutions are not caustic as are some other materials common in fertilizer plants, he said, but yet the solutions are dangerous if allowed to strike the eyes. Thus, goggles or a full face mask should be mandatory attire for any operator working in an area where gauge or rotometer glasses might break or a line rupture.

When working on tank cars in limited space, high above the ground and with limited exit facilities, full safety equipment should be provided as protection against contact with the solution, and also to guard against possible panic in case of an accident. A fall from the top of a car could result in injuries more severe than that from the solutions.

Another potential danger in working with rail cars is that of a switching crew pulling away a connected car, breaking the hose and allowing the solution to spew madly through-

out the area. Mr. Jones urged his hearers always to check and see that a "tank car connected" sign is ahead of the car and a derail device is present.

The speaker also warned against failure of equipment in the plant as an additional hazard. Use of metals and other materials vulnerable to the corrosive action of nitrogen solutions should be avoided. Regular replacing of hoses even though they appear to be sound is a good practice from the standpoint of safety, he said.

"Remember, nearly all of the liquid materials you are now using in your operation can be hazardous," he concluded. "Look over your plant layout. Make modifications to minimize or avoid these hazards. Install safety equipment. Instruct your operators how to handle these materials properly, give them the necessary protective equipment and insist that they use it. Then assume that you will have an accident. This means that you must provide emergency treatment facilities in the area where aid can be administered promptly."

A group discussion on safety problems brought up by conferees at the meeting produced numerous additional points concerning plant safety. This portion of the meeting was handled by John E. Smith, Spencer Chemical Co., Pittsburg, Kansas, past chairman of the national section.

Members of the executive committee of the fertilizer section were guests of the National Plant Food Institute at a luncheon on Monday, Oct. 19. Paul T. Truitt, executive vice president of NPFI, Washington, D.C.,

was host at the meeting held in the LaSalle Hotel.

The section elected the following men to the executive committee for the coming year:

George L. Pelton, Smith Agricultural Chemical Co., Columbus, Ohio; Stratton McCargo, GLF Soil-Building Service, Ithaca, N.Y.; John Mark, Ohio Farm Bureau, Columbus, Ohio; C. L. Griffith, Virginia - Carolina Chemical Corp., Cincinnati, Ohio; Wayne High, Baugh Fertilizer Co., Baltimore, Md.; E. O. Burroughs, Jr., F. S. Royster Guano Co., Norfolk, Va.; John E. Smith, Spencer Chemical Co., Pittsburg, Kansas; W. C. Creel, North Carolina department of labor, Raleigh; A. B. Pettit, safety director, W. R. Grace & Co., New York, and Mike C. Ellison, Mississippi Chemical Co., Yazoo City, Miss.

Roger Hugg, personnel supervisor, International Minerals & Chemical Corp., Skokie, Ill.; Quentin S. Lee, Cotton Producers Assn., Atlanta, Ga.; Grayson B. Morris, Southern States Cooperative, Richmond, Va.; William A. Stone, Wilson & Toomer Fertilizer Co., Jacksonville, Fla.; George F. Dietz, Fertilizer Manufacturer's Cooperative, Baltimore, Md.; Edward J. Largent, Reynolds Metals Co., Richmond, Va.; Norman F. Maddux, Florida Nitrogen Co., Tampa, Fla.; Frank A. Gerard, Olin Mathieson Chemical Corp., New York, and Carl E. Alkire, Davison Chemical Co., Division of W. R. Grace & Co., New Albany, Ind.

In addition to the above-named committeemen, the three officers and the immediate past president are also members of the executive committee.

Two Interior Administration Problems Discussed by Panel at WACA Meeting

SAN MATEO, CAL.—Two problems of interior administration were viewed by two panel members participating in a discussion on commercial aspects of the agricultural chemicals industry, at the 30th annual meeting of the Western Agricultural Chemicals Assn., held at the Villa Hotel, here, Oct. 13-14.

Rigid credit enforcement helps rather than hinders the sales effort, according to C. M. Stutfield, general credit manager for the California Spray-Chemical Corp., Richmond. Reporting on a study his firm had completed regarding the relationship between credit stringency and sales volume, he found that where good business practices were in force, sales increased much more rapidly than where credit regulations were relaxed.

Proper control of inventory is important because inventory management has become a major cost factor in the proper operation of a business, said Eugene C. Heckathorn, president of United-Heckathorn, also of Richmond. The yearly costs of maintaining an adequate inventory are running some 18 to 25% of the total inventory value, and a good systematization will help to reduce costs. With some 500 items, including packaged goods and sizes, the problem has become highly complicated.

"The number of items and cost of inventory requires adequate record keeping, but more important is the proper interpretation of data by management," Mr. Heckathorn said. "Turnover, percentage of value, time and dollar limits, physical counts and forecasting are the tools most managements should be thoroughly familiar with and facile in their use," he concluded.

Association members elected a new board of directors on the first day of the annual two-day event. In addition to the officers, George W. Weldon, Velsicol Chemical Corp., Berkeley; and George Poppe, Coastal Chemical Co., Oxnard, president and vice president, the following were named to the board: George Kitzmiller, Pacific Supply Co-op, Portland, Ore.; E. F. Bashor; Shell Chemical Co., San Francisco; Ivor Burden, retiring president of United-Heckathorn, and

thorn, Richmond; Thomas S. Castle, A. L. Castle Inc., Morgan Hill; S. W. Strew, Colloidal Products Co., Sausalito; C. L. Turzan, Geigy Agricultural Chemicals Co., Fresno; Harvey M. Bales, Arizona Pest Control Co., Glendale, Ariz., and Fred A. Smith, American Cyanamid Co., Phoenix. C. O. Barnard is continued as executive secretary.

Robert Minehen, Crown Zellerbach Corp., captured golfing honors with a low gross score of 73 strokes, beating out 54 other contestants in the largest tournament held at an association meeting.

Solutions Convention Plans Announced

CHICAGO—The 1959 convention of the National Fertilizer Solutions Assn. will be held at the Statler Hilton Hotel in St. Louis, Nov. 8-10.

Highlights of the conference include:

- "Solutions and Suspensions" by W. S. Newsom, Jr., research engineering and development division, International Minerals & Chemicals Corp., and Edgar W. Sawyer, Jr., research supervisor, Minerals & Chemicals Corporation of America.
- "Green Acids" by the general chemicals division of Allied Chemical Corp.
- "Formulations" by H. H. Tucker, Sohio Chemical Co.
- "Corrosion" by Murry C. McJunkin, U.S. Steel Co.
- Panel discussion on nitrogen, phosphates and potash, by J. E. Tuning, Spencer Chemical Co.; James L. Brown, Monsanto Chemical Co., and Dr. Edwin C. Kapusta, U.S. Potash Co., respectively.
- Panel discussion with Robert A. Lemler, nitrogen division, Allied Chemical Corp.; Edwin C. Aylward, Aylward Fertilizer Co., Sullivan, Ill.; E. E. Crouse, C.D. Liquid Fertilizer Co., Liberty, Ind.; L. T. Stone, Goodpaster Grain & Milling Co., Brownfield, Texas; Edward A. Wex, Badgerland Liquid Fertilizer Corp., Milwaukee; Nelson D. Abell and Morris Woosley.



EXAMINING a young crop of barley to which Carbyne has been applied are Proctor Gull (kneeling), manager of new product development for Spencer Chemical Co., and Dr. R. W. Harned, Washington, D.C., a Spencer research consultant. The plot shown here is part of a testing location which Spencer maintained last summer near Winnipeg. Wild oat control by Carbyne on this plot is indicated by the ability to see between the rows of barley plants. Check plots at this stage were infested to the point where the division lines were no longer visible.

Spencer Announces Research Results On 'Carbyne,' New Wild Oat Herbicide

KANSAS CITY, MO.—Spencer Chemical Co. has announced the results of an extensive research and development program for a selective herbicide to control wild oats. Trademarked Carbyne, the new herbicide is said to have shown definite control of wild oats in a number of crops grown in the north-central states and prairie provinces of Canada.

One of the major weed pests in these areas, wild oats (*Avena fatua*) has heretofore been uncontrollable by chemical methods. Spencer is currently seeking registration of the new chemical and plans to market it on a controlled basis next spring.

A post-emergence herbicide, Carbyne in solution is applied as a spray

large commercial growers, indicated that, in addition to wheat, flax and barley, Carbyne can be used to control wild oats in sugar beets and canning peas.

In general, the over-all test results indicate that Carbyne, if applied at the proper time and in the proper amount, can be effective in controlling wild oats. The action of the new herbicide, which has the chemical name of 4-chloro-2-butynyl N-(3-chlorophenyl) carbamate, is to inhibit or kill the wild oat plant, allowing the crop being grown to develop without severe competition. Field tests this past summer supported laboratory findings that, for maximum effectiveness, spraying must be done when the wild oat is at the proper leaf stage (usually 1½ to 2½ leaves).

Toxicological and residue studies have shown that Carbyne will pose no serious handling or soil residue problems.

CHEMICALS

(Continued from page 1)

census, U.S. Department of Commerce.

Synthetic anhydrous ammonia production was 342,634 short tons during August, compared with 366,509 short tons for July and 280,581 short tons for August, 1958.

Production of ammonium nitrate in August, 1959, was 230,166 short tons, or 13,870 short tons more than in July, and 45,424 short tons more than August a year ago.

Synthetic ammonium sulfate production during August amounted to 92,162 short tons, which was more than both the July, 1959 production and the August, 1958 production. Ammonium sulfate byproduct production was 14,559 short tons, down from the preceding month and the same month last year.

Production of nitrogen solution (including in combination with urea) in August was 54,487 short tons, compared with 46,561 short tons for July and 40,161 short tons in August, 1958.

Nitric acid production in August, 1959, was 241,848 short tons, compared with 233,412 short tons for July, and 196,916 short tons for August, 1958.

Total phosphoric acid production during August was 154,062 short tons. This was 13,750 short tons more than July production and 20,708 short tons more than August, 1958 production.

Production of sulfuric acid was 1,310,875, down from July totals, but higher than August, 1958 totals.

when the wild oat plant is in the 1½ to 2½ leaf stage (about six to nine days after emergence). Generally, the experiments indicate, ½ lb. per acre is the satisfactory rate.

These application recommendations were made upon the conclusion of what Spencer researchers believe to be one of the largest field testing programs ever conducted on a single herbicide. Five test locations, two in North Dakota and three in Canada, made up a total of more than 8,000 separate test plots on which Carbyne was tested under a wide variety of conditions on wheat, flax and barley.

In addition, the herbicide was furnished to a number of U.S. and Canadian experiment stations for testing. These tests, as well as those made by

California Fertilizer Convention Plans Told

SAN FRANCISCO—Vince Barnett, Hollywood comic, will be one of several featured speakers during the 36th annual convention of the California Fertilizer Assn., to be held at the Fairmont Hotel, San Francisco, Nov. 9-11.

Thomas Fleischman, director of western operations, St. Regis Paper Co., San Francisco, and chairman of the convention program committee, said that other featured speakers will include Dr. Russell Coleman, executive vice president, National Plant Food Institute, Washington, D.C., and Joseph Burger, director of public relations, H. V. Nootbaar & Co., Pasadena.

The business meeting will feature reports by Howard H. Hawkins, association president, Golden State Plant Food Co., Glendora; Sidney H. Biery, general manager, Sacramento; Millard E. McCollam, chairman, CFA soil improvement committee, and western states manager of American Potash Institute, San Jose; Dr. Coleman, and Mr. Burger. Mr. Barnett will speak following luncheon in the Venetian Room on Nov. 9.

At the business session that morning four directors will be elected to three year terms, one to a two year term, and one for one year. Officers will be chosen by the new board of directors for 1960. Budgets for CFA operation, and for the soil improvement committee program will be presented for approval.

On the morning of Nov. 11, the assembled convention will participate in a panel discussion on the subject of the convention theme, "Technical Progress and Business Stability." Panel moderator will be R. L. Luckhardt, vice chairman of the soil improvement committee, of Collier Carbon & Chemical Corp., Los Angeles. Members of the panel will include Floyd Hornibrook, the Best Fertilizers Co., Lathrop; Dr. Guy F. MacLeod, Sunland Industries, Fresno; Dr. Malcolm H. McVickar, California Spray - Chemical Corp., Richmond; Larry M. Roberts, Shell Chemical Corp., San Francisco; James F. Sloan, J. F. Sloan Co., Salinas, and William E. Snyder, Wilbur-Ellis Co., Los Angeles.

The ladies' bridge and canasta tournament will be held on Nov. 9 in the afternoon.

The entire day of Nov. 10 will be given over to recreation. Features will include ladies' and men's golf tournaments, and a bowling tournament. A cocktail hour and luncheon, sponsored by the association, will be held that day in the English Room, Canterbury Hotel, a feature of which will be a fashion show.

The annual banquet will be held on the evening of Nov. 11 in the Gold Room of the Fairmont Hotel. Ray Hackett and his 10 piece orchestra will provide dance music, and Genie Stone will entertain. Awards will be made here to the winners of competitive events, and there will be several ladies' door prizes, too.

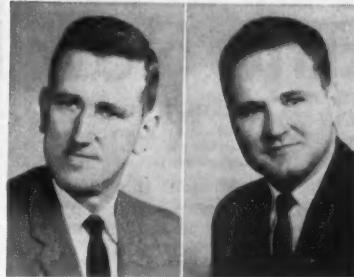
Assisting Mr. Fleischman and his program committee in development of program and entertainment are committees headed by Mrs. A. L. Diebolt, Los Altos, and Robert E. Segerdell, Hercules Powder Co., San Francisco.

New Sales District

NEW ORLEANS—West Virginia Pulp and Paper Co. has created a new sales office to be known as the middle Atlantic sales district, announced by Jason M. Elsas, regional manager, multiwall bag division.

The new sales office will cover the states of Maryland, Virginia, North Carolina and South Carolina.

Mr. Elsas said that H. Lockwood Frizzell, formerly a sales representative for the division, has been promoted to the position of district sales manager for the new sales district, which will be headquartered in Charlottesville, Va.



E. M. Harper R. A. Lemler

ASSISTANTS NAMED—Edwin Aylward, vice president, AYLUO fertilizer division of Unexcelled Chemical Corp., Sullivan, Ill., has announced the assignment of two assistants. E. M. Harper, formerly midwest sales supervisor for Nitrogen Division, Allied Chemical Corp., will serve as assistant to Mr. Aylward. R. A. Lemler, formerly midwest product supervisor, direct application solutions for Nitrogen Division, Allied Chemical Corp., will serve as assistant to Mr. Aylward in charge of sales promotion and advertising.

Canadian, U.S. Weed Control Experts Plan Joint Meeting

WINNIPEG—Canadian and U.S. weed problems will be highlighted when weed control experts and officials from both nations meet at the Joint Western Canadian and North Central Weed Control Conference to be held on Dec. 8-10 at the Royal Alexandra Hotel, in Winnipeg.

This conference affords many weed workers in both Canada and the U.S. an excellent opportunity to share, with one another, research findings in weed control. Already many advance registrations have been received and the conference arrangements committee expects an attendance of at least 600.

Dow to Dedicate New Division Nov. 3

MIDLAND, MICH.—Formation of a new division of the Dow Chemical Co., to be known as the Saginaw Bay Division, was announced by W. H. Schuette, Dow vice president and general manager of its Midland Division.

The company's board of directors will formally dedicate the new division in ceremonies at Bay City, Mich., on Nov. 3. Dr. Leland I. Doan, company president, will give the dedicatory address.

The new division will group three separate Dow operations located in Bay City on a 1,400-acre tract on the Saginaw River near Saginaw Bay. Two of them are newly-completed plants now moving into production.

FDA

(Continued from page 1)

data, FDA said, the epoxide appears to be more acutely toxic than heptachlor. The agency explained that long-term testing and evaluation of results to prove the safety of combined residues of heptachlor and its epoxide have not been completed. FDA says its action was taken as a preliminary step in eliminating any residue of heptachlor or the epoxide on crops for which heptachlor has been permitted.

Within 30 days after the Oct. 27 publication of this proposal, FDA said, manufacturers who have registered a product containing heptachlor or heptachlor epoxide with the U.S. Department of Agriculture, or who have applied for a registration, may request referral of the proposal to a scientific advisory committee.

Written comments from other interested persons may be filed with the Hearing Clerk of the Department of Health, Education, and Welfare, also within 30 days.

The New Look in Agriculture*

By EARL L. BUTZ
Dean, School of Agriculture
Purdue University
Lafayette, Indiana

The most constant thing about our society is change. Ours is a dynamic society. Change is the law of progress. This is especially true of modern American agriculture. Those who process our food and fiber are also swept along in the same swift current of change.

Adjustments which have occurred in agricultural production and marketing during the past ten years have been phenomenal. Still greater changes lie ahead.

The advances we will experience in the next decade will be unparalleled in American agriculture. It is possible that a generation hence agricultural historians will refer to the 1950's as the "decade of the scientific breakthrough."

Never before in history has the future been so near as now. Research and education are shortening the time span of progress. We shall occupy ringside seats in scientific and technological developments during the next decade equivalent to changes which our fathers took a generation to accomplish.

Adjustments have always had to be made in American agriculture. But because these adjustments in previous generations were spread through several decades, farm families were able pretty well to "take them in their stride." Today the agricultural revolution is advancing with such rapidity that farm families and rural communities often find it difficult to make the kind of economic and sociological adjustments that are required. This is equally true for agricultural businesses.

Growth is always painful. Economic and sociological changes in our way of living have always been difficult. The present adjustment is no exception. It is not easy for farm families to change their methods of production, their scale of operation, or even to shift vocations. It is more difficult for a farm family to shift vocations than for an industrial worker. However, farm sons and daughters, as well as farmers themselves, have been shifting to non-farm voca-

tions in this country for generations. It was in this manner that industrial America grew. Only the rapidity of the present shift is new.

The impact of these agricultural developments on farming itself, on community life, and on food processing and distribution is tremendous. These are days when farmers and businessmen alike, like Alice in Wonderland, have to "run like the dickens just to stay where they are."

What Will Be the Impact of These Changes?

For the purposes of the present discussion, we may group the impact of these technological changes under five headings.

1. Capital requirements for agriculture will grow, in total, per farm, and per man. This trend has been particularly pronounced during the past two decades. Its continuance is inevitable.

Our agricultural plant now has total assets in excess of \$200 billion. This is a record high figure. About 89% of this represents owners' equities, as total debt is now around \$22 billion, or about 11% of total assets. This is a conservative figure, and is probably a healthy minimum, considering the necessity to refinance most farms each generation when ownership changes to younger hands.

Total investment per farm in the U.S. now averages more than \$40,000. This includes a lot of small part-time or subsistence farms. Investment per commercial farm is much higher. It is not uncommon for family commercial farms in the Corn Belt, for example, to have a total investment in excess of \$100,000.

Investment per worker is growing rapidly. Only 15 years ago, the average U.S. farm had about \$3,500 invested in land and equipment for each farm worker. Today that figure is over \$16,000 per worker. On many commercial family farms the investment per worker runs up to \$50,000 or higher. This compares with an average investment per industrial worker of around \$14,000. This means it takes three to four times as much capital investment to create one agricultural job on many of our family commercial farms as it does to create a typical industrial job in our cities.

As agricultural science continues to advance, it is inevitable that the business units in agriculture will get bigger and bigger with still larger amounts of capital required. This trend cannot be stopped. Nor should it be. We must adjust our farm institutions and our farm programs to it, so as to capture such benefits as will flow from it.

Machines will continue to displace men on our farms. We will produce more with fewer farms and with fewer workers than at present.

This is not a new trend. It has been going on for decades.

2. The number of farms will decrease. At the present time we have about 4.6 million farm units in the U.S. Slightly less than 2 million of these are what we commonly call commercial family farms. The remainder are in effect part-time or quasi-subsistence farms. They contribute relatively little to the commercial flow of food and fiber in this country. Indeed, the top 2 million of our farms produce approximately 90% of all food and fiber entering into commercial trade.

The other 2 million plus farm units, although classified in agriculture, are operated by farm people who really need more opportunity to improve their situation either through enlargement of the individual farm business or through additional employment off the farm. Many of these people are so situated that the solution to their problem must ultimately be found outside of agriculture.

We must help the marginal farmer and the operator of an undersized acreage to become a better and more efficient farmer, or to find opportunity in other fields where he is better suited and where his income opportunities are larger.

There are some people who just weren't cut out to be farmers, just as other people don't make successful machinists, carpenters, or salesmen.

It is not at all coldblooded to suggest to a farmer that he seek other employment or that he supplement his farm income with an off-the-farm job if he can't make a good living in farming. It is really coldblooded to attempt through legislative programs to keep him tied to a farm which everyone knows is inadequate to provide a decent living for himself and his family. People in other jobs and in other professions take this kind of healthy competition in their stride. And they usually improve their lot in life. Many low income farmers can and will do the same if they are given the opportunity, and if the politicians will stay out of their hair.

In many areas of the country, there is a job waiting in industry, a job with good pay, for the farmer who finds that farming is not his long suit. And if his children want to go into engineering, into medicine, into teaching, or into the skilled crafts in the city, they can be sure that a position awaits them when they finish school. There is nothing dishonorable about this kind of vocational shift. It's been taking place ever since the founding of the nation. Without it, our high level of living would have been impossible. We would have been a nation of peasants, with each family tied to its small acreage of land. We would have advanced little beyond the current status of major agrarian populations in the Near East and the Far East.

In 1910 we had 32 million people on farms, representing 35% of our total population. In 1940 we had 30 million people on farms, but only 23% of our total population. At the present time the number of people

on farms is down to about 21 million, or 11% of our total population. It has been predicted that by 1975, farm population may be around 17 million, or about 7.5% of the total of around 228 million.

This will mean that production per worker on our farms two decades hence must be more than twice as high as it is now. And it's now twice as high as it was less than two decades ago. This kind of development must inevitably mean higher living standards for those who man our farms and produce our food and fiber.

These commercial family farms will increasingly take on the characteristics of a business organization. The percentage of gross receipts consumed by production expenses will rise even higher than today. At the present time about 65¢ of each dollar the farmer receives is spent for goods and services which he requires to run his business. This does not include his wages to himself. In earlier periods, expenses consumed less than 50¢ out of the dollar. A decade or two hence expenses will consume more than 65¢ of the dollar. The farm will operate on a narrower margin per unit of output. This means that volume must increase in order to increase profits.

This trend suggests that farms are becoming more like other businesses in that they acquire more and more of their goods and services rather than having them produced on the farm or consumed there. In a sense, therefore, the farmer becomes the manager of a manufacturing operation, as he puts together packages of technology which have been processed on a custom basis by others. One of the best illustrations of this is, of course, the highly integrated broiler industry.

3. The trend toward integration will spread. We have heard so much about vertical integration in agriculture in recent months that many of us are frightened by it. We should not be. Vertical integration in agriculture is the result of fundamental economic and technological changes occurring in the agricultural industry—not the cause of them. It is a manifest effort by individual sectors of the agribusiness assembly line to survive in the swift competitive current of our modern dynamic food and fiber industry.

Agriculture is in the midst of a far-reaching scientific and technological revolution which is shaking the very foundations of its traditional institutional patterns.

Agriculture is changing from a way of living to a way of making a living. It is changing from a business of arts and crafts to a business undergirded with large amounts of science and technology.

The present agricultural revolution, resting on basic science and closely allied with the widespread advance of automation in both production and distribution, is threatening the traditional pattern of owner - manager - operator all wrapped up in a single person.

This is the very basis of much of today's social and political unrest in agriculture.

The fact that vertical integration is one of the stage properties being used by science, by technology, and by automation places it under political suspicion as the villain in the act.

Nearly everyone is familiar with the industrial integration which characterizes production of poultry meat in this country. But poultry is not alone in this field. It's just led the procession. We find similar illustrations in some of our canning and freezing vegetable crops. Large animal production in this country is by no means immune from the possibility of integration. Indeed, the pressure is in that direction. Production of meat animals to market specification is just around the corner. Ad-

*Delivered at 26th Annual Meeting of National Agricultural Chemicals Assn., French Lick, Ind., Oct. 21, 1959.



WACA OFFICERS—New officers elected at the recent convention of the Western Agricultural Chemicals Assn. at San Mateo, Cal., are shown above. They are George W. Weldon, left, Velsicol Chemical Corp., Berkeley, Cal., president; George Popole, Coastal Chemical Co., Oxnard, Cal., standing, vice president; and C. O. Barnard, seated, was reelected executive secretary of the group. Convention story appeared in Croplife, issue of Oct. 19, 1959.

vances in genetics and nutrition, both for plants and animals, and advances in environmental physiology will make this possible. This means that we will have predetermined performance built into breeding animals just as is now the case with crops.

If and when this kind of integration begins to hit the large animal field, it will precipitate sociological and economic adjustments that will be difficult. We will need to study the organization of our production units carefully and steer our farm policy course wisely in order both to minimize the adverse impacts, and to maximize the favorable aspects of this development.

4. Our countryside will be "urbanized." A transformation is taking place among us which is changing the thinking and actions of a vast segment of our population. The "country hick" and the "city slicker" have virtually disappeared as prototypes on the American scene. The line of demarcation between people living in rural areas and those in urban areas is fast becoming obliterated.

Cultural and social patterns are being changed in every section of our country by the population shifts that are taking place. Our modern science and technology have made it possible for the city to move to the country and for the country to move to the city. Our countryside is becoming "urbanized." Farm and city folk live alongside each other in our newly "urbanized" communities. The effect of the resulting intermingling has been that there is no longer a farm population and an industrial population, especially within 40 or 50 miles driving distance of our big industrial centers, and that includes practically the whole eastern and central parts of the country.

Today the commercial farmer not only takes on the financial aspects of a big businessman, but because he now associates with businessmen and laborers who live nearby him in the country and whose children go to the same school, increasingly this farmer is beginning to think like they do.

The city limit sign at the edge of your county seat town doesn't mean the same thing it did a generation ago. It's now just a tax boundary. It's no longer a cultural boundary, an educational boundary, a recreational boundary, an economic boundary, or a social boundary. The same kind of people live on one side of that city limit sign as on the other side. They have the same literature, the same radio and TV programs, the same recreational opportunities, the same educational opportunities, the same social and cultural opportunities.

In this process of "urbanization," the elements of rural and urban living are being blended together. The "urbanization" of America has long been in the making. Only in recent years has it come to the fore as a powerful influence reflecting a great change taking place in our way of life.

A new agriculture in America is emerging with breathtaking rapidity. The transformation is taking place so quickly that we are experiencing great difficulty in adjusting to it economically, sociologically and politically.

For many years in our city communities the doctor has lived beside the lawyer, beside the machine operator, beside the bricklayer, beside the school teacher, and each has lost his vocational identity as a member of his community. So it will tend to be with our commercial farmers in the newly "urbanized" communities. The farmer-businessman will live beside the urban businessman, the urban industrial worker, and the urban professional man, with a decreasing emphasis on vocational differences among them.

Ultimately they will lose their vocational identity as members of the

community. At this point farming will no longer be a "way of life," but will be a "way of making a living," just the same as other business enterprises.

5. Agriculture is an expanding industry. American agriculture is an expanding industry in every important respect except one—the number of people required to run our farms. Only in this single respect can it be said that agriculture is a "declining" industry.

Our agricultural plant uses each year more capital, more science and technology, more managerial capacity, more purchased production inputs, and more science and research than the year before. It is obvious, therefore, that those writers and analysts who refer to agriculture as a "declining industry" look only at a single phase of this growing and important American industry.

The declining trend in farm population, although viewed with alarm by some politicians and rural fundamentalists, is itself a sign of a strong agriculture.

This is the age of science and technology in American agriculture. Brainpower has replaced horsepower as the central ingredient of success on our farms.

We have already seen how total capital and capital per worker in agriculture greatly exceeds that in American industry. Total capital assets on our farms now exceed \$200 billion. If you add to this the investment in agricultural businesses, the total investment in what has commonly come to be called "Agribusiness" exceeds the total industrial assets in America.

When we consider the agricultural industry, we need to include in our thinking those businesses that supply our farmers with items used in production, as well as the processing and distributive concerns that handle the food and fiber produced on our farms. For every worker on American farms, there is approximately 7/10 worker engaged in supplying farmers with goods and services used in production, and approximately another worker engaged in processing and marketing the food and fiber produced on our farms. This entire group comprises approximately 37% of our labor force. This figure hasn't changed much the last decade or so. We've had a trend toward fewer workers on farms, but increasing numbers of workers in the agriculturally related businesses.

When the total agribusiness is taken into consideration, approximately $\frac{1}{2}$ of the workers are on farms and $\frac{1}{2}$ off. Approximately $\frac{1}{2}$ of the capital is on farms and $\frac{1}{2}$ off. Approximately $\frac{1}{2}$ of the value added is on farms, and approximately $\frac{1}{2}$ off the farm.

The farm plant in America purchases approximately \$17 billion worth of goods and services used in farm production. To this it adds a value of about \$17 billion, which means that total farm produce leaves the farm gates at about \$34 billion. Processing and distribution add another \$45 billion to this, which makes a total value of output in agribusiness of approximately \$80 billion.

These figures point out the growing importance of agriculture as a market. Industry depends upon agriculture as a customer to a greater extent than most people realize. In contrast to 40 or 50 years ago, when farmers were producing most of their own fuel, power and fertilizer, industry is now furnishing farmers each year:

6½ million tons of finished steel—more than is used for a year's output of passenger cars.

45 million tons of chemical materials—nearly five times the amount they used in 1935.

17½ billion gallons of crude pe-

roleum—more than is used by any other industry.

285 million pounds of raw rubber—enough to make tires for 6 million automobiles.

22 billion kilowatt hours of electrical power—more than enough to serve the cities of Chicago, Detroit, Baltimore and Houston for a year.

I could go on citing other evidences of the tremendous importance of agriculture in our national life, but I think I've made the point. Whatever happens to agriculture has a direct and major impact upon industry—and industry, by the same token, has a very great interest in the welfare of agriculture.

Those of us who work in agricultural education and research have a responsibility to service the whole broad area of Agribusiness. The mere fact that functions once performed on the farm have now been transferred off the farm does not mean

that our responsibility to them has diminished. Indeed, it may have increased.

The Job Ahead

It is not the purpose of this discussion to detail our job in the difficult days ahead. Suffice it to point out that the job will be a challenging one, and a difficult one.

We must all combat the philosophy that sometimes rears its ugly head and asserts that because of current agricultural surpluses we should "declare a moratorium on research and education."

This is a false and dangerous doctrine. It was preached in 1920 when post World War I surpluses developed. Think where we would be today if that philosophy had prevailed 25 years ago. It was preached again in 1940, just before World War II, when surpluses again plagued us. Think for a moment

(Turn to NEW LOOK, page 19)



MURIATE OF POTASH for the PLANT FOOD INDUSTRY

THIS symbol stands for high-grade uniform, coarse and granular Muriate of Potash (60% K₂O minimum). Southwest Potash Corporation provides a dependable supply of HIGH-K* Muriate for the plant food industry.

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Dr. M. R. Clarkson Named To New ARS Position

WASHINGTON—Dr. M. R. Clarkson has been named associate administrator of the U.S. Department of Agriculture's Agricultural Research Service, USDA announced.

Dr. William L. Popham, who has been serving as assistant administrator for regulatory programs, has been named to Dr. Clarkson's former position as deputy administrator.

As associate administrator, a new position in ARS, Dr. Clarkson will share with Dr. Byron T. Shaw, administrator of ARS, the broad authority and responsibility for coordination of all USDA research as well as administration of research and ARS regulatory activities.

ARS regulatory activities, for which Dr. Popham will now have primary responsibility, include: (1) animal disease control and eradication; (2) meat inspection; (3) control and eradication of insect pests and plant diseases; (4) enforcement of plant and animal quarantines and regulatory orders; and (5) enforcement of other related statutes.

Crabgrass Controls Discussed at Meeting

MANHATTAN, KANSAS—"We're nearing the time when pre-emergence applications of certain chemicals in granular or spray form will do a good job of holding down crabgrass," Ronald Campbell told persons attending the tenth annual Central Plains turfgrass conference at Kansas State University, Manhattan.

Mr. Campbell's remarks came on a tour of K-State's experimental crabgrass control plots and turfgrass garden. He is a member of K-State's department of horticulture.

Mr. Campbell said the interest is in control of crabgrass through pre-emergence applications, and several chemicals looked good in K-State tests this year.

TALK SCHEDULED

BERKELEY, CAL.—"Control Those Flies—Or Else!" is the title of a talk to be given to dairymen attending a meeting of the California Farm Bureau's dairy department in Los Angeles by Arthur C. Smith, senior vector control specialist in the State Department of Public Health. The meeting will be held at the Statler Hilton Hotel on Monday, Nov. 9, in connection with the 41st annual convention of the California Farm Bureau Federation.

GOVERNORS ATTACK BOLL WEEVILS

ASHEVILLE, N.C.—Southern governors turned from their preoccupation with industrialization at the last moment here Oct. 14 and attacked the boll weevil.

The 25th Annual Conference of Southern Governors unanimously approved a resolution in its final minutes urging the federal government to provide "sufficient funds" to establish a research program on the cotton pest.

Offered by Gov. Ernest F. Hollings of South Carolina, the statement noted the boll weevil has cost the South "an estimated eight billion dollars in reduced cotton yields, lowered grades, damaged lint and seed, and poisoning costs"

Federal funds provided by the recent congress weren't adequate, the governors agreed.

"The cotton growers of the areas affected by the boll weevil are fighting a desperate battle for economic survival because of excessive production costs and competition from both synthetic fibers and from other cotton producing areas," the resolution said.

"We . . . urge the U.S. Department of Agriculture to include in its 1960 budget request sufficient funds for carrying out an adequate research program," the governors resolved.

Du Pont to Build West Virginia Plant

WILMINGTON, DEL.—A new plant to make methylamines, basic chemicals used in manufacturing agricultural chemicals and other chemicals will be built at the Du Pont Co.'s Belle, W.Va., site, the company announced today.

The new plant will more than double Du Pont's capacity for methylamines, now made at the Houston, Texas, works, according to Clark W. Davis, general manager of the company's industrial and biochemicals department.

Construction by the company's engineering department will begin early next year with completion expected in the first quarter of 1961. The new plant will provide jobs for about 18 employees at Belle, with construction requiring an average of 90 men monthly.

SALES, INCOME-UP

KANSAS CITY, MO.—Both sales and net income of Spencer Chemical Co. for the three months ended Sept. 30 showed substantial improvement over the corresponding period of a year ago. The increases resulted from greater sales volume in all three of the company product divisions—plastics, agricultural and industrial chemicals—and from improved prices for nitrogen products, according to Kenneth A. Spencer, board chairman. Net sales for the quarter were \$14,265,102, compared with \$11,961,025 a year earlier. Net income amounted to \$1,338,627, equal to \$1.06 a common share, after preferred dividends, compared with \$720,008, or 52¢ a share, a year ago.

L. V. Clegg Named Purchasing Agent

MONTREAL—The appointment of L. V. Clegg as general purchasing agent of the company has been announced by Canadian Industries Limited. He succeeds J. D. Wright, who has been appointed general manager of the chemicals division.

Mr. Clegg received his elementary and secondary education in Campbellford, Ont., and joined C-I-L in 1930 as a chemist, after graduating from the University of Toronto with a bachelor of science degree in chemical engineering.

He held posts in a number of the company's agricultural chemicals plants, becoming works manager of the fertilizer plant at Hamilton in 1943. For a period following the war, at New Westminster, B.C., he was in charge of all production and sales of fertilizer for western Canada.

Since 1951, as production manager of the agricultural chemicals division, he has been in charge of fertilizer manufacture at the company's seven plants in Ontario, Quebec and the Maritimes.

Agrico Announces Personnel Changes

NEW YORK—K. R. Hedrick has been named production superintendent at Agrico's manufacturing plant at East St. Louis, Ill., according to an announcement by D. S. Parham, vice president in charge of production for the American Agricultural Chemical Co. Mr. Hedrick, who was formerly superintendent at Danville, Ill., replaces R. T. Green, who has resigned.

D. S. Kirk was named production superintendent at Danville, replacing Mr. Hedrick. He was formerly located at Agrico's Humboldt, Iowa, plant, where he was assistant superintendent.

Equipment Field Day

TIFTON, GA.—All types of planting and fertilizing and spraying equipment were on display at the "Farm Equipment Field Day" held Oct. 15 at Abraham Baldwin Agricultural College here.

About 300 persons attended the display of latest farm equipment and demonstrations on use of this equipment.

GOVERNOR TO SPEAK

TRENTON, N.J.—Gov. Robert B. Meyner of New Jersey will deliver the opening address at the 1959 New Jersey Marketing Institute to be held Nov. 9 at Princeton. The one-day conference, devoted to trends and problems in the food marketing field, is being sponsored by the New Jersey Department of Agriculture and the New Jersey Agricultural Society.

Monsanto Announces Department Merger

ST. LOUIS, MO.—Monsanto Chemical Co. announced that it is combining the functions of advertising, corporate marketing research and district sales office coordination into a single staff department, the marketing services department.

John L. Gillis, Monsanto vice president of marketing, said that the new department will be headed by William R. Farrell of St. Louis who has been director of the advertising department. Edmund Greene of St. Louis, who has been supervising marketing research activities under Mr. Gillis' direction, is associate director of the new department.

At the same time, Mr. Gillis announced that William A. Lang of St. Louis has joined the new department as manager of industrial design and John C. Moran, also of St. Louis, has been appointed manager of district office coordination. Mr. Farrell will continue to supervise corporate advertising and Mr. Greene will supervise marketing research activities in addition to their new departmental administrative functions.

Victor and Stauffer's Stockholders Approve Merger of Two Firms

NEW YORK—Stockholders of Stauffer Chemical Co., New York, and of Victor Chemical Works, Chicago, approved a plan for merger of the two companies at special meetings Oct. 27, according to announcements made by Hans Stauffer, president of Stauffer Chemical Co. and August Kochs, chairman of Victor. Stauffer's stockholders met at San Francisco and the Victor group at Chicago.

Although all details of the plan have not been announced, it was stated that Victor will become the Victor Chemical Division of Stauffer and three of Victor's directors will join the Stauffer board.

Each firm will continue its operations as before, the companies state, and no changes in personnel are contemplated at the present time.

Smut Causes \$1.5 Million Minnesota Barley Loss

ST. PAUL, MINN.—An epidemic of loose smut disease cost Minnesota farmers more than \$1.5 million in losses this year.

The damage was concentrated in the Red River Valley, where most of the state's barley is grown, according to Karl D. Fezer, plant pathologist, at the University of Minnesota.

A survey shows that an average of 6.4% of all barley heads were infected, and it went as high as 30% in some fields. In most cases, an infected head produces no seed.

Plant pathologists are now checking about 150 seed samples from around northwest Minnesota. If infection is shown by this survey to be widespread, all barley growers will be urged to send in samples of their seed for checking. Results of the survey will be announced as soon as it is completed.

Appointments Announced

LOS ANGELES—Appointment of Dr. D. S. Taylor as president and Dr. C. L. Randolph as vice president of U.S. Borax Research Corp. was announced by Hugo Riemer, executive vice president of U.S. Borax & Chemical Corp. and chairman of the board of its research subsidiary.

Dr. Randolph will be in active charge of operations at the research corporation's million-dollar laboratory facilities at Anaheim, Cal.

Dr. Taylor, who recently was appointed vice president of the parent company, has been with U.S. Borax & Chemical Corp. and its predecessor companies for 14 years in various research and development capacities.



RECEIVES SCHOLARSHIP—George Pictor, standing left, Route 1, Batesville, Ind., Purdue University freshman in the agronomy program of the school of agriculture, receives the first year payment of \$400 on a four-year \$1,000 scholarship from Irving Haug, West Lafayette, sales representative for Smith-Douglas Co., Norfolk, Va., scholarship donor. V. C. Freeman, seated, associate dean of Purdue's school of agriculture, witnesses the presentation. Mr. Pictor was selected to be the first recipient of this scholarship because of his outstanding high school and 4-H record. To obtain the three additional \$200 yearly payments, Mr. Pictor must maintain a scholastic record high enough to be in the upper 50% of his class each year.

**SPECIAL
MERCHANDISING
SECTION**

BETTER SELLING

**MARKETING
NEWS AND
FEATURES**



P. S. STOVAL (left), general manager, and C. A. Hardin, store manager, of the Hollandale Seed & Supply Co., Hollandale, Miss., believe in giving the customer "service he can't get anywhere else." The right photo shows the attractive store front and large parking area.

OVER THE COUNTER

By Emmet J. Hoffman
Croplife Marketing Editor

"Accidents will happen," as the old saying goes. Being properly prepared for them is an intricate task, requiring considerable know-how.

Suppose old Bill, your long time route man, comes down suddenly with a heart condition. He can't afford an extended illness and he's frantic about his family's well-being. What can you and your company do for him?

Because accidents and emergency situations are just as likely to confront employees of a small company as a large company, the various assistance plans which are available are applicable to both sizes of operations.

E. I. du Pont de Nemours & Co., in a recent edition of its employee publication "Better Living," discusses the subject "How to Meet a Personal Crisis."

Du Pont, as the article says, has developed a "carefully planned program

to cushion the more serious blows." The company has installed:

- A disability wage plan—designed to protect the employee against loss of income when he is unable to work.
- A group hospitalization insurance

(Turn to **OVER THE COUNTER**, page 13)

Alabama Partners Shuffle Services, Change Lines, Reduce Credit to Build Profits

By JESS BLAIR
Croplife Special Writer

Though the annual volume has now reached the six-figure amount, there is no one single thing that contributes to the success of the Holley & Quarles Farm Store at Northport, Ala. The partners, Carl Holley and John Quarles, have no secret formulas of business. Yet their store is one of the most prosperous in the area.

"Several changes have been made in recent years," said Mr. Holley, "and most of them have helped a little. For one thing, we are not so lenient on credit. We carry a few farm accounts, but they are either good for the money or else we get crop mortgages."

Another practice which reduces

overhead is in not having a free delivery service. The store gets 10¢ per cwt. for delivering feed or fertilizer. If a farmer orders a ton, the delivery charge is still \$2.

The store has no rental equipment of any kind. This is a saving in this area, because most farmers prefer to do their own fertilizer spreading. And the town is too small to justify the renting of small spreaders and other tools.

There has been a close study made of each item in stock for any length of time. Mr. Holley says each one is considered on two points: how much profit it returns, and how necessary it is to hold trade.

"Take groceries, for instance," said Mr. Holley. "You will notice that

By EMMETT ROBINSON
and ED WHITE
Croplife Special Writers

A diversity of products coupled with customer service is the formula followed by the Hollandale Seed & Supply Co., Hollandale, Miss., in building repeat business.

"We try to get as close to our customer as we can and give them service they can't get anywhere else," C. A. Hardin, manager, said. "And we try to stock anything they might want so they don't have to look to another store to sell them something they need."

By getting close to the customer Mr. Hardin means that the firm's

four outside salesmen stay on the road as much as is practical. "We have two full time salesmen on the road," he said. "Then, too, I spend as much time as I can getting out and talking to our customers and we have another man who spends part of his time on the road and part of the time in the store. The only way we can keep up with what the farmer is thinking about is to get out there and talk to him."

Since cotton is the major crop in the Hollandale trade area (the central section of the Mississippi Delta) the company does a big business in insecticides and carries four major brands, both liquid and solid.

"There is a big trend toward the use of liquid insecticide in our area," Mr. Hardin reported, "and we sell far more liquid insecticide than we used to. This has built a new line of products and service for us. We sell a complete line of spray equipment, sprayer parts and service spray units for our customers."

The apparently insatiable appetite of the boll weevil is primarily responsible for most of the insecticide sales in this cotton country. So three years ago Hollandale Seed & Supply employed an entomologist full time to help customers with their insect control problems. When the entomologist is not scouting fields he fills in as a route salesman.

This staff man scouts customers' fields on a regular basis throughout the season. If the farmer is with him the entomologist makes his report in person. If the farmer happens to be away, the entomologist completes a written report and leaves

The store sells a complete line of feeds, fertilizer and insecticides.

(Turn to **ALABAMA**, page 14)

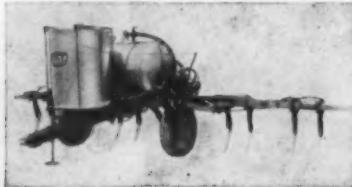
(Turn to **REPEAT**, page 13)

WHAT'S NEW

IN PRODUCTS • SERVICES • LITERATURE

No. 6973—Liquid Fertilizer Spreader

The John Blue Co., Inc., announces the "Nitro-Shooter Dual Purpose Series 80" liquid fertilizer spreaders. The unit comes equipped for simultaneous application of anhydrous ammonia and phosphoric acid. The machine may be equipped with either a standard 14 ft. tool bar or a 21 ft.



tool bar, for six row application. The machine is pictured with 200 gal. ammonia tank, 100 gal. phosphoric acid tank and variable stroke metering pumps for both anhydrous ammonia and phosphoric acid. The ammonia pump is of new design which permits it to meter accurately 200 to 6,000 lb. of ammonia per hour, the company says. For more information, check No. 6973 on the coupon and mail.

No. 6974—Urea Fact Sheet

The chemicals division of Olin Mathieson Chemical Corp. has published a four-page fact sheet on Mathieson urea. The brochure shows the availability of the product in the East through the firm's North Claymont, Del., plant and also points up engineering improvements designed to produce highest grade prilled and crystalline urea, the company says. The urea will be produced by SunOlin Chemical Co., jointly owned by Sun Oil Co. and Olin Mathieson. Copies of

the fact sheet and further information can be obtained by checking No. 6974 on the coupon and mailing to this publication.

No. 6976—Insect Control Machine

An all-purpose insect control machine that can be used for air-blast spraying, high volume spraying with a hose, dusting or pellet broadcasting, has been announced by Besler Corp. The machine has a 35 in. axial-flow type blower. The motor is 56 h.p., Wisconsin air-cooled. Other features include adjustable vanes in the volutes that direct columns of insecticide-filled air. A provision is made for a



small spray boom to cover the area directly under the machine when it is used for spraying row crops, the company said. For more information, check No. 6976 on the coupon and mail to this publication.

No. 6975—Marking Ink

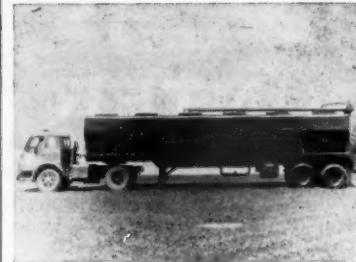
Ink in spray cans for stenciling steel drums and other containers has been announced by Reynolds Ink, Inc. The inks are available in nine colors, dry almost instantly and are weather and waterproof, the company says. The inks are not limited to stenciling steel drums, but can be used for sten-



ciling containers of every sort and for color coding and identification marking, the company says. For more information, check No. 6975 on the coupon and mail.

No. 7688—Bulk Material Trailer

A semi-trailer "Skoop Skipper" has been added to the Pamco line by Productive Acres Manufacturing Co. The unit combines all the features of the Skoop Skipper with a larger capacity, the company says. It loads and unloads and handles many bulk materials including corn cobs, feed and fer-



tilizer. A positive seal assures against leakage of feed or other materials from the compartments, the company noted. Each auger is driven individually by its own hydraulic motor. If any auger binds due to foreign objects in the material being handled, a safety valve immediately stops operation. The trailer's master control unit at the rear is designed for complete and easy operational control. For more information, check No. 7688 on the coupon and mail.

Send me information on the items marked:

- No. 6964—Liquid Fertilizer Applicator
- No. 6965—Gibberellin Bulletin
- No. 6966—Literature on Containers
- No. 6967—Lawn Fertilizer Spreader
- No. 6968—Control Valve, Selector
- No. 6969—Stainless Steel Sprayer
- No. 6970—General Catalog
- No. 6971—Accident Booklet
- No. 6972—Descriptive Brochure
- No. 6973—Liquid Fertilizer Spreader
- No. 6974—Urea Fact Sheet
- No. 6975—Marking Ink
- No. 6976—Insect Control Machine
- No. 7688—Bulk Material Trailer

(PLEASE PRINT OR TYPE)

NAME

COMPANY

ADDRESS

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P. L. & R.)
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Croplife

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Reader Service Dept.

Minneapolis 40, Minn.

No. 6969—Stainless Steel Sprayer

A stainless steel sprayer with electrically seam-welded joints and threaded fittings to prevent leaks has been announced by the Lofstrand Co. The stainless steel combats corrosive action of some insecticides, the company says, and gives the sprayer a long life. The unit is equipped with a



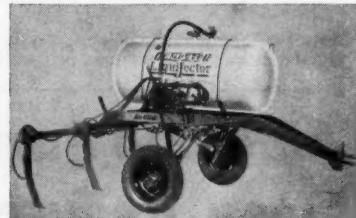
shoulder sling for easy handling. This sprayer is the accepted standard model for U.S. Army Engineers, the company says. For more information, check No. 6969 on the coupon and mail.

No. 6970—General Catalog

The 1959-60 edition of the Dow Chemical Co.'s general catalog is now available. The 44-page publication, called "Products of the Dow Chemical Company," lists the properties and uses of some 375 industrial, pharmaceutical and agricultural chemicals currently produced by the firm. The listing includes established products and developmental items. For copies of the catalog, check No. 6970 on the coupon and mail.

No. 6964—Liquid Fertilizer Applicator

A liquid fertilizer applicator has been developed by Dempster Mill Manufacturing Co. The applicator, designated the No. 600 "LiquiJector," will be available in models for either anhydrous ammonia or liquid fertilizer solutions applications. Anhydrous ammonia models come equipped with a choice of the Dempster Model B adjustable stroke positive displacement metering pump or flow valve de-



Also Available

The following items have appeared in previous issues of Croplife. They are reprinted to help keep dealers on the regional circulation plan informed of "What's New."

No. 6965—Gibberellin Bulletin

Merck & Co., Inc., announces an extensive technical bulletin on its brand plant growth substance "Gibrel." The bulletin contains such chapters as "Agricultural and Horticultural Uses," "Gibrel in Relation to Plant Nutrients," "Reported Responses," "The Methods of Use," "Typical Properties," "Solubility Data," "Analytical Methods," "Biological Studies" and a bibliography and abstracts. According to the bulletin's preface, the results of work done by agricultural station workers are quoted or reflected in the report. For more information, check No. 6965 on the coupon and mail.

livery, the company said. Solutions models are equipped with Dempster Model SN or SC metering pumps. The pumps are driven direct from the ground wheel. Axles are adjustable from 72 in. to a maximum of 84 in. width; by changing the forward bracket setting of the double acting hydraulic lift, the applicator operates with either high or low clearance; the 2 in. sq. tool bar can accommodate either regular rigid beams or Dempster 1 1/4 in. double coil spring shanks. For more information, check No. 6964 on the coupon and mail.

No. 6967—Lawn Fertilizer Spreader

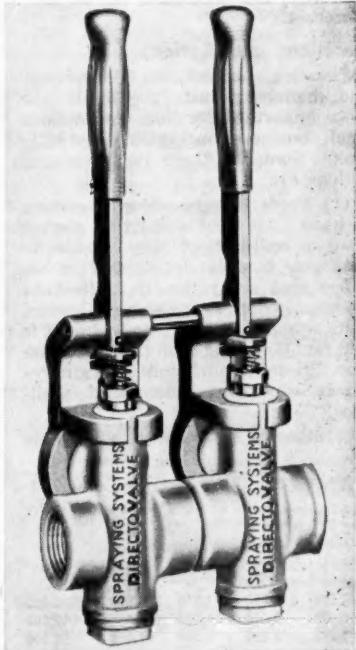
The Cyclone Seeder Co., Inc., announces the Cyclone Model B Lawn



Spreader. According to company literature, features include freedom from fertilizer streaks, accuracy of application and extra-wide spread of up to 8 ft. Width of the spread varies from 4 ft. to 8 ft., depending on the weight of the material. Seed, fertilizer, lime, ice melters and granular herbicides, insecticides and other pesticides can be applied with the spreader, the company said. Material is thrown in a fan-shaped pattern ahead of and to the sides of the spreader. Rates can be varied from 4 oz. to 30 lb. per 100 sq. ft. An on-off knob on the handle gives positive shutoff, the company said. For details, check No. 6967 on the coupon and mail.

No. 6968—Control Valve, Selector

Spraying Systems Co. announces its new control valve and selector for spray rigs, called the "DirectoValve." All parts of the valve that are touched by chemicals are made of either nylon or stainless steel, the company says. The valves are supplied in one, two, three or four port designs. Pictured is the two-outlet-port valve for use with a two-section boom. Each valve



section is opened by lowering the pivoted handle. The unit can be positioned anywhere adjacent to the tractor seat for the convenience of the operator, the company says. Design feature, according to company literature, is that the valve provides a bypass when closed, protecting hose lines, fittings and pump from excessive pressure buildups. For more information, check No. 6968 on the coupon and mail.

No. 6971—Accident Booklet

The 1959 edition of "Accident Facts," the National Safety Council's statistical yearbook, is now available. It contains facts and figures on all types of accidents—home, traffic, industrial, public, farm and school. Several sections are devoted to industrial accidents, the council said, and pro-

vide a comprehensive background for an industrial safety program. The booklet contains a list of accident rates by major industry groups, accident trends, the part of the body most often injured in accidents and off-the-job accident problems. For information on the booklet and quantity prices, check No. 6971 on the coupon and mail.

No. 6972—Descriptive Brochure

A brochure containing information about the services of the Bio-Search & Development Co. has been made available. The brochure describes the company's bioanalytical service whereby coded chemicals may be submitted for bioassay in all areas of biological activity and use. A section on the company's personnel and system, plus charts on the firm's search and development program and stages of bio-testing are included. For copies of the brochure, check No. 6972 on the coupon and mail.

No. 6966—Literature on Containers

Carbolineum Wood Preserving Co., Inc., announces a new flyer which discusses the company's three color, all lithographed 5 gal. cans. The flyer is in color and contains photographs of the cans. Information about the display advantages of the cans is included. For more details, check No. 6966 on the coupon and mail to this publication.

JOINS ASSOCIATION

SAN FRANCISCO, CAL.—Two new members have joined the Agricultural Aircraft Assn., Inc., of Fresno, Cal., according to Wanda Branstetter, executive secretary. The new voting member is A-F Helicopters, Inc., of San Fernando, Cal., represented by Vernon Dunn, manager. A new sustaining member is Agricultural Aviation Institute of Minden, Nev., represented by Murray A. Kahn, director.

New Fertilizer Plant

TORONTO, ONT.—A new \$500,000 fertilizer manufacturing plant is being planned for construction at Tillsonburg, Ont., by United Cooperatives of Ontario, officials of the co-op have announced. The new plant represents an expansion of the Ontario-wide fertilizer program of the UCO and it is designed to provide service and quality fertilizers for farmers in southwestern Ontario.

The property for the plant has been purchased, and construction will begin immediately. UCO officials expect the plant will start fertilizer operation sometime in early 1960.

DUSTER DIES

CAIRO, GA.—Wayne Stephens, 28, was killed Oct. 5 when his Cub crop-dusting plane crashed at Calvary, Ga., 15 miles southwest of Cairo, in Grady County, where he operated a crop dusting service. He was dusting pole beans at the time.

and pea-pickin', beet-pullin', spud-diggin', orange-pluckin', apple-knockin' growers, too
...in fact EVERYBODY who grows ANYTHING is hearing about what Brea Brand dealers have to offer...

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Ammonium Nitrate Solution (20% N)
Aqua Ammonia plus Sulfur
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Prilled Ammonium Nitrate (33.5% N)
Ammonium Sulfate (21% N)
Pelleted Fertilizers (20-20-0, 14-14-14, 20-10-0, 16-16-8)

For complete information, write to:

Manager, Agricultural Chemical Sales, Dept. C-11

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Financial Planning Easy, But Important

By JOHN PAUL JONES

President, John Paul Jones Associates, Inc.
San Francisco, Cal.

Watching, planning, managing, and conserving cash can be both simple and direct. To start off, you need to understand clearly two facts about cash. One has to do with capital cash and the other with working cash.

Capital cash may be thought of as represented by the funds spent for buildings, fixtures, machinery, equipment and tools; that is, items that became fixed assets on your balance sheet. Sources of capital cash are investment (someone's savings), earned and retained profits from operations, and reserves set aside for depreciation.

Working cash may be thought of as represented by the funds spent for materials, labor, and overhead—all expense items incident to the operation of your business. The principal source of working cash must be income produced by the business.

Recognize the Differences

Many small business owner-managers fail to recognize the differences between capital cash and working cash. They don't understand the role that each kind plays in a business. As a result, they make mistakes in cash management.

For example, failure to distinguish capital cash from working cash—and the requirements for each—led the Crampton Co. (name disguised), a small road building and paving contracting firm, into extreme difficulties. It went out after, and landed, its biggest job boosting volume for the year 60% above the average of the four previous years. The job was successfully completed. But because Crampton purchased all the required extra equipment, the firm ended the year with its largest profit and no cash. It had to borrow to pay income taxes.

The point is this: All, or at least a major portion, of the extra equipment should have been leased. Cash should have been conserved. A highly efficient road grader was no substitute for cold cash.

Here's another case in point: Two physical units, a bakery-coffee shop and a bar-restaurant, had been operated profitably by two brothers and a brother-in-law. Then they got into trouble because these three owners could agree on only one thing—that real estate was a good investment. Whenever they had any cash, not needed immediately to pay current bills, they used it to buy property. When they ran out of money they couldn't pay their bills, much less take discounts. Finally they had to sell off a major portion of real estate not used in the business.

Check Your Cash Flow

Working cash, as the term implies, is that portion of your firm's working capital that is constantly in the form of cash. During the normal course of operation, cash "flows." That is to say it changes into materials and labor and overhead, then into finished goods, then into receivables and final-

ly back into cash. That is the complete cash-to-cash cycle.

Each business has its own time sequence for working cash to flow from costs to sales and back to cash. For good cash management you have to know the approximate timing and amounts of cash you need at any given time to support any given volume of business.

To work out the pattern of your own cash cycle you need only a few simple calculations. Start by classifying and averaging each of your major income and out-go items. For example, how long does it take to collect your money from credit sales? Check the number of days from the date a product was sold to the date the payment was made. Using a similar approach, the flow of cash may be timed in practical terms for other items.

In contrast to a manufacturing operation think of a restaurant. It has a rapid cash cycle. Income is cash available daily. The major out-go items are wages and food, which are on a weekly basis. Other expenses like supplies, services, utilities, and rent are paid monthly. The cash cycle is completed once each month.

One small restaurant had an annual sales volume of \$240,000. But due to the fact that it was located in a resort area and drew most of its trade from tourists, it had wide variations in volume. In fact, it did about two-thirds of its business in less than 6 months. This condition produced an uneven requirement for working cash. By establishing a weekly cash-on-hand schedule as of each Monday morning, the manager was able to increase his net profit from less than 2% to over 6%. Minimum cash re-

SUMMARY

Busy small-firm managers often neglect the job of financial planning. Then the business runs into difficulties. It finds itself short of cash. It can't pay its bills. Cash management is essential if a business is to operate successfully. You must have money to meet all your commitments—including withdrawals and dividends. Your cash position at any given time is a significant index of your concern's ability to grow. Even though other assets may be in good condition, they are no substitutes for cash. You can't pay off obligations with accounts receivable, nor with inventory, nor with new orders, nor with any capital asset. Many small plant managers overlook the fact that in times of prosperity and expansion they have to watch their cash more carefully than ever. Many put off studying their cash needs because they think it will be difficult and costly. Effective cash management, however, is often neither difficult nor costly. This Aid offers some practical suggestions on control and planning. This article was prepared with the cooperation of the Small Business Administration.

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quirements ran from a low of 55% to as high as 260% of weekly volume.

Take another situation. A lumber and building supply dealer has a relatively slow cash cycle. His income is 16% cash sales, and 84% credit. He'll have a combination of 40, 60, and 90 day accounts receivable with an average collection period of 48 days. The major out-go items are purchases and wages. Purchases are on an accounts payable basis, with the average payable period 61 days. Wages are semi-monthly. Here the cash cycle is completed in just under three months.

One growing lumber and building supply firm had annual net sales of \$420,000. Under the pressure of a bank's unwillingness to increase outstanding term loans, it established a cash requirements schedule as of the first day of each month. By conserving and managing its cash, the firm increased inventory turnover from 4.4 to 5.4 times in single year. It also decreased receivables from an average of 48 days to 36 days. Through a combination of cash purchases and discounts on payables, it made savings calculated at twice the cost of interest on bank borrowings. With the help of the bank this company has recently acquired another yard in an adjacent area.

What the Cash Cycle Means

The cash cycle of any going business is clear-cut evidence of how that business is operated. It can and does vary, of course, even within businesses of a similar kind. But analysis—by tracing the flow and timing of cash, in through sales and out through purchases and expenses—will reveal the pattern of how the concern uses its cash.

Simplicity should be your objective in setting up a cash requirements schedule. Based upon the analysis of (1) actual cash use, (2) cash requirements, and (3) your firm's studied and expressed wishes, a forecast by weeks, months, or quarters can be developed. A year's projection by months showing cash needs in terms of dollars is the most common. In some few instances a longer period is used for special reasons.

Such a cash forecast provides the small business owner-manager with a practical financial tool. This tool makes much easier the job of controlling those internal operating factors that must be decided and acted upon to keep the business running soundly.

Figure 1 shows a typical forecast of operations and cash flow. In preparing it the manager of the "Wombat" (name disguised) Manufacturing Co. made the following assumptions on which projections could be based:

1. Sales will develop unevenly over the year, but on a fairly predictable monthly pattern.

2. Beginning and ending inventories will be constant, but variations will occur during the year according to production needs.

3. Sales will be made on credit terms and outstanding receivables will equal sales made during the preceding two months.

4. Purchases will also be made on credit and paid for in the month following delivery.

5. Working cash out-flow for general and administrative expense will be confined to the month indicated by the operating budget.

6. Capital cash out-flow for adding fixed assets will be planned in advance and accounted for in the forecast.

Decisions and Actions

Planning, scheduling, observing, and managing cash, highlights the more important decisions and actions small business managers constantly make. Some of these decisions and actions are:

(1) **Profit Margins:** For a business to have cash, profits must be earned from operations. A key factor in profitable business is the margin between cost and price—the difference between what a product or service costs to make and sell, and what it is sold for. Watching cash protects margins. To maintain profit margin requires continuous thoughtful vigilance.

(2) **Credits:** Accounts receivable

"WOMBAT" MANUFACTURING COMPANY

Forecast for 1959

	First Quarter			Second Quarter			Third Quarter			Fourth Quarter			Totals
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Monthly operations													
Net sales	\$17,500	\$17,500	\$20,000	\$20,000	\$22,500	\$22,500	\$30,000	\$40,000	\$37,500	\$32,500	\$22,500	\$17,500	\$300,000
Less: Material used	8,750	8,750	10,000	10,000	11,250	11,250	15,000	20,000	18,750	16,250	11,250	8,750	150,000
Direct labor	1,750	1,750	2,000	2,000	2,250	2,250	3,000	4,000	3,750	3,250	2,250	1,750	30,000
Other mfg. exp.	2,625	2,625	3,000	3,000	3,375	3,375	4,500	6,000	5,625	4,875	3,375	2,625	45,000
Cost of goods sold	13,125	13,125	15,000	15,000	16,875	16,875	22,500	30,000	28,125	24,375	16,875	13,125	225,000
Gross profit	4,375	4,375	5,000	5,000	5,625	5,625	7,500	10,000	9,375	8,125	5,625	4,375	75,000
Less: Sales expense	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	45,000
Gen. & ad. exp.	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	21,000
Operating profit	(1,125)	(1,125)	(500)	(500)	125	125	2,000	4,500	3,875	2,625	125	(1,125)	9,000
Cash flow													
Cash bal. (beginning) ..	5,000	7,000	3,375	1,000	1,750	1,250	2,625	1,500	1,625	3,000	1,875	2,000	
Receipts from receivables	22,500	17,500	17,500	17,500	20,000	20,000	22,500	22,500	30,000	40,000	37,500	32,500	
Total available cash	27,500	24,500	20,875	18,500	21,750	21,250	25,125	24,000	31,625	43,000	39,375	34,500	
Less disbursements													
Trade payables	10,000	10,000	11,250	11,250	15,000	20,000	18,750	16,250	11,250	8,750	8,750	8,750	
Direct labor	2,000	2,250	2,375	3,000	4,000	3,750	3,250	2,125	1,750	1,750	1,750	2,000	
Other mfg. expenses	3,000	3,375	3,250	4,500	6,000	5,625	4,875	3,500	2,625	2,625	2,625	3,000	
Sales expense	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	
Gen. & admin. exp.	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	
Fixed asset additions					2,500	2,500	2,500						
Repay. of bank loans									7,500	22,500	18,750	8,750	
Total disbursements	20,500	21,125	22,375	24,750	33,000	37,375	32,375	27,375	28,625	41,125	37,375	28,000	
Indicated cash shortage					1,500	8,250	11,250	16,125	7,250	3,375			
Bank loans to be obtained					2,500	10,000	12,500	18,750	8,750	5,000			
Cash bal. (ending)	7,000	3,375	1,000	1,750	1,250	2,625	1,500	1,625	3,000	1,875	2,000	6,500	
Materials purchased	10,000	11,250	11,250	15,000	20,000	18,750	16,250	11,250	8,750	8,750	8,750	10,000	
Month-end position													
Accounts receivable	35,000	35,000	37,500	40,000	42,500	45,000	52,500	70,000	77,500	70,000	55,000	40,000	
Inventory	43,000	46,875	48,750	56,250	69,250	80,500	82,500	69,250	54,250	43,000	39,250	41,250	
Accounts payable	10,000	11,250	11,250	15,000	20,000	18,750	16,250	11,250	8,750	8,750	8,750	10,000	
Bank loans payable					2,500	12,500	25,000	43,750	52,500	57,500	50,000	27,500	8,750

Figure 1

what's NEW?

Broyhill **PLASTI-CHEM**
Lined Tanks resist corrosion of chemicals and liquid fertilizers.

CRUSADER "220" Spreader with PLASTI-CHEM tank. Ideal for applying corrosive chemicals. Nurse Tanks in 500 and 1,000 gal. sizes available.

Write to: the **Broyhill COMPANY** DAKOTA CITY, NEBRASKA

are not cash. Credit losses are direct deduction from profits. So grant credit with care, on terms that are firm and understood by the debtor. See that collections are in keeping with terms granted. Go out after the delinquents. Most consumer and business debtors are proud to pay on time. Be sure to make your customers proud by seeing that they pay up promptly.

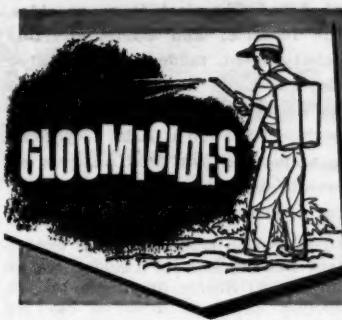
(3) **Overbuying:** Inventory is not cash. But purchases must be paid for in cash. Maintain a balanced inventory to avoid over or underbuying. Review the effect of each on cash. A supplier, of course, tries as hard to sell to you as you try to sell to your customers. A special-price purchase of more than you need can seriously upset your cash position. Confining special purchases to cash and the taking of normal trade discounts will, in the long run, usually result in better profits and a stronger financial structure.

(4) **Overtrading:** To seek big volume at cut prices may be enticing, but it can lead to profit disaster and a cash squeeze. It is often better to take less volume and maintain margins and cash. Remember that, at times, price competition can become so tough that it is good business to let the other fellow have the business. Watching cash places a damper on down-trading—a business bad habit.

(5) **Expense Control:** Scheduling cash and observing cash flow can do more to hold down operating expenses than any other readily available small business index. Effective control of expense is attained by avoiding cost commitments. Furthermore, it is much easier to avoid added expense than it is to reduce expenses once added.

(6) **Working vs. Capital Cash:** To avoid confusion and the over extension of capital cash to the detriment of working cash, a simple device can be used. Use two check books: One account, one color for all working cash payments, another account and color for all capital cash payments. Watch, especially carefully, all capital cost commitments.

Large, publicly owned and professionally managed corporations have long recognized the need for and used cash cycle schedules—both for capital and operation cash. When to expand, when to defer, when to curtail are determined from timely knowledge of cash requirements in relation to volume, profit margin and the availability of funds.



Mama: "Let's buy Junior a bicycle."
Papa: "Do you think it will improve his behavior?"

Mama: "No, but it will spread his meanness over a wider area."



A free-advice-seeking woman asked a farmer what would be good to plant in a spot that gets very little rain due to overhanging eaves, has too much late afternoon sun, has clay soil and is on a rocky ledge.

"Lady," he answered, "how about a nice flagpole?"



A young man took his city-bred girl friend to a night club in Las Vegas, a place decorated in cowboy style. After a while the girl excused herself to go to the powder room. She returned a moment later, her countenance a blushing red. "Ted," she said, "you'll have to help me. Am I a heifer or a steer?"



"Why haven't you returned your report card, Johnny?" the angry teacher asked.

"I can't get it back," the boy answered. "You gave me three A's, and they're still mailing it to the relatives."



Wonder if the telephone company heard about one of its operators who warned a caller that his three minutes were up with: "Sir, your time has come."



"Is it raining outside?" asked a diner of a waiter.

"Sorry, sir," sniffed the man, "but I'm not your waiter."

REPEAT

(Continued from page 9)

it for the farmer to scan when he returns.

The company also ties in with an aerial applicator to boost insecticide sales and to help their customers arrange for application. "However, there is some noticeable trend away from aerial application in this area," Mr. Hardin says. "More and more farmers are turning to the high boy for insecticide application."

Other lines carried by the firm include veterinary supplies, fertilizers, Chilean nitrate, pre and post emergence herbicides, garden supplies, defoliants and desiccants, Nutrena feeds and leather goods such as bridles and saddles for the few mule farmers and horse fanciers in the area. Many of these products are displayed in the 50 by 36 ft. sales room. The garden supply line occupies a great deal of space in the sales room and represents a rapidly increasing portion of the sales picture.

Most of the company's advertising is based on direct mail. "We are rather in a unique position here," Mr. Hardin explains. "There is no radio station that covers our trade area completely. Also, the newspaper here does not give us the coverage we desire. Therefore, we have turned heavily to direct mail to keep our name and our products before our customers."

Much of the direct mail is that furnished by the manufacturers of farm supply products. In some cases the Hollandale Seed & Supply Co. simply furnishes its mailing list to the manufacturer and the literature is mailed direct. Other times, the company sends such literature, together with mailing pieces developed locally to its customers. "We average a mailing every two weeks," Mr. Hardin said. "Part of the mailings are post cards and others are in letter form."

On the farm delivery service is taken care of by two bob trucks and two tandem trucks. Another on-the-farm service includes the calibration of spray rigs and other equipment. And all members of the staff are frequently called upon for management advice. If the information is not immediately available, Mr. Hardin obtains it from the extension service specialists or experts on the staff of the feed, fertilizer or insecticide manufacturers.

Store hours are six a.m. to six p.m. during the spring, summer and fall seasons and seven a.m. to five p.m. during the winter. Three clerks are on duty at all times in the sales room. The company regularly services customers within a 50 mile radius of Hollandale.

The firm does an extensive wholesale and retail seed business operating as the Hollandale Seed & Delinting Co. Located in a warehouse adjoining the retail store, this part of the business has two Super 29 D seed cleaners with Hart-Carter separators. Seed is stored in 11 bins.

"Our seed is bagged and sold without our label. If we put our own label on it and tried to compete through retail outlets with established brands we would have to back it with intensive advertising and promotional programs. We do not think that we are properly set up to do this kind of business," Mr. Hardin observed. However, the company does do an export business in cottonseed with Central and South American countries.

Credit offered to most customers is the usual 30-day variety. Mr. Hardin concedes that the firm does more credit business than it would like to. However, he feels that he is hamstrung by the traditional credit arrangements in his area and that any major attempt to put more sales on a strictly cash basis might result in a loss of business.

Mr. Hardin and P. S. Stovall, company general manager, believe that the diversity of products and services is the keystone to the firm's success and they have no intention of falling by the wayside as new products and services become available. They point out that their entry into the sprayer business is only one example of how a flexible operation can garner additional profits.

They look to the increasing acceptance of pre and post emergence herbicides by farmers as opening new avenues of revenue. Also, there is a possibility that sales of mixed fertilizers will be increasing in coming years in the Mississippi Delta although the area now is primarily a nitrogen market only.

OVER THE COUNTER

(Continued from page 9)

plan—which helps pay major hospital bills.

● An accident and health benefit plan—in the form of a regular weekly payment to the employee when he is ill or disabled, which helps defray costs of doctor, drug and other medical expenses not covered by the hospitalization insurance plan.

● A life insurance plan—one which is paid for by the company and one which allows the employee to buy insurance at reduced group rates.

● A thrift plan—which works as a payroll savings plan enabling the employee to save "for a rainy day."

● A special benefits plan—which supplements state workmen's compensation benefits when the employee is injured on the job.

Some of these plans are paid for completely by the company. Others cost the employee less than if he purchased similar protection for himself because of the reduction in rates when group purchases are involved. Plans like the thrift plan are paid for entirely by the employee in the form of payroll savings.

"In all cases," the article states, "the company's contribution and the expenses of administration are part of the many costs of doing business and are reflected in prices of Du Pont products."

Du Pont feels that these benefits are one form of earnings.

Getting back to your ill route man, Bill, under Du Pont's program he would have received help in the form of hospitalization insurance to pay most of the hospital expenses, regular wages under the disability wage plan and accident and health benefits amounting to about \$25 a week which could have helped pay for the medical expenses not covered by hospitalization.

Emergencies, in many instances however, are often quite apart from the realm of employee-company relations. In such cases, even though the company doesn't want to infringe on the employee's privacy, it is a good idea to be able to give the right advice if asked. A thorough knowledge of the benefits that your community has available for private citizens is advisable.

WOODCHUCK WOOD

ITHACA, N.Y.—Some of the 10 million farm fence posts installed yearly in New York state will have shorter—not longer—lives if they're treated with certain wood preservatives.

Recent experiments in the state college of agriculture at Cornell show gnawing animals (probably woodchucks) are damaging certain types of wood treated with two toxic salt preservatives—osmosalts and a combination of sodium hydroxide and copper sulfate.

A Selected List of References on Salesmanship*

The following list of books on salesmanship may be used as a guide for self-improvement reading. While this list is not exhaustive, it contains most of the better known and more widely used books on salesmanship.

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2. Berman, Edward—"Successful Low Pressure Salesmanship," Prentice-Hall; 1957.
3. Bettger, Frank—"How I Raised Myself From Failure to Success in Selling," Prentice-Hall; 1949.
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5. Brooks, Pierce Posey—"How Power Selling Brought Me Success in Six Hours," Prentice-Hall; 1956.
6. Canfield, Bertrand R.—"Salesmanship Practices and Problems," Third Edition, McGraw-Hill; 1958.
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8. Dunn, Luther A.—"Dynamic Selling," Vantage Press; 1956.
9. Ernest, John W., and DaVall, George M.—"Salesmanship Fundamentals," Gregg (McGraw-Hill); 1954.
10. Goldman, Heinz M.—"How to Win Customers," Printers Ink Book Co., New York; 1958.
11. Grief, Edwin Charles—"Modern Salesmanship: Principles and Problems," Prentice-Hall; 1958.
12. Haas, Kenneth B.—"Case Problems in Creative Salesmanship," Prentice-Hall; 1957.
13. Haas, Kenneth B.—"How to Develop Successful Salesmen," McGraw-Hill; 1957.
14. Hegarty, Edward J.—"Making Your Sales Presentation Sell More," McGraw-Hill; 1957.
15. Katz, Julius H.—"How to Make the Most of Your Sales Territory," Prentice-Hall; 1957.
16. Kirkpatrick, Charles A.—"Salesmanship: Helping Prospects Buy," Third Edition, Southwestern Publishing Co.; 1956.
17. Knox, James S., and Knox, John—"A Modern Course in Salesmanship," Business Book Co.; 1956.
18. Kusel, Harry—"How to Sell Against Tough Competition," Prentice-Hall; 1956.
19. Lapp, Charles L.—"Successful Selling Strategies," McGraw-Hill; 1957.
20. Leberman, Elmer G.—"The New Art of Selling," Harper; 1957.
21. Mangan, James Thomas—"How to Win Self-Confidence for Selling," Prentice-Hall; 1957.
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23. Murphy, John D.—"Secrets of Successful Selling," Prentice-Hall; 1956.
24. Packard, Vance O.—"The Hidden Persuaders," McKay; 1957.
25. Pederson, Carlton A., and Wright, Milburn D.—"Salesmanship Principles and Methods," Third Edition, Irwin; 1958.
26. Roth, Charles B.—"My Lifetime Treasury of Selling Secrets," Prentice-Hall; 1957.
27. Roth, Charles B. (pseud. Emile Raux)—"The Salesman's Complete Ideas Handbook," Prentice-Hall; 1956.
28. Roth, Charles B.—"Questions and Answers on Modern Selling Techniques," Prentice-Hall; 1956.
29. Roth, Charles B.—"Secrets of Closing Sales," Third Edition, Prentice-Hall; 1953.
30. Seltz, David P.—"Successful Industrial Selling," Prentice-Hall; 1958.
31. Smith, Abbott P.—"How to Sell Intangibles," Prentice-Hall; 1958.
32. Tosday, Harry Rudolph—"Selling in Our Economy," Irwin; 1957.
33. Wheeler, Elmer—"Tested Ways to Close the Sale," Prentice-Hall; 1957.
34. Whiting, Percy H.—"The Five Great Rules of Selling," Rev. Edition, McGraw-Hill Book Co.; 1957.
35. Russel & Beach—"Textbook of Salesmanship," McGraw-Hill Book Co.

*Prepared for 1959 Fertilizer Salesman's School, Sept. 3-4, 1959, by Extension Marketing.

FARM SERVICE DATA

EXTENSION SERVICE REPORTS

Nitrogen increased cotton yields in all but the extremely dry year of 1954 in three years of fertilizer experiments of growing cotton on Sharkey clay soil at Marie.

The studies, conducted by Dr. D. A. Hinkle and J. F. Jacks, involved varying fertilizer rates to supply 0, 40, 80, 120, and 240 lb. of nitrogen per acre. Dr. Hinkle heads the agronomy department at the University of Arkansas' Agricultural Experiment Station. Mr. Jacks is assistant director in charge of the Northeast Branch Station at Keiser.

The first 40 lb. of nitrogen increased yields by 350 lb. of seed cotton an acre, the next 40-lb. treatment further increased yields 125 lb., and the third 40-lb. application gave an additional 100 lb. increase, Dr. Hinkle and Mr. Jacks reported. In other words, 120 lb. of nitrogen boosted yields 575 lb. an acre.

"Rates higher than 120 lb. did not appreciably increase yields; therefore the 120-lb. rate is about the maximum amount that would be expected to increase yields. Whether a farmer would want to use this maximum rate or a lesser rate would depend on economic factors," they said.

The conventional method of application, in which ammonium nitrate was applied in water furrows and bedded upon before planting, gave as satisfactory yields as applying all the nitrogen in the beds.

Nitrogen increased the amount of cotton picked at the first picking; thus it contributes to earliness of cotton grown on this soil type, the researchers said.

★

Correcting potash deficiency in a commercial planting of black raspberries resulted in 20% more fruit, 25% more canes and a 100% increase in the weight of dormant prunings which reflect the improved vegetative growth of the planting as a result of the treatment.

The experiment was conducted by Cornell pomologists at the experiment station at Geneva, N.C., and the College of Agriculture at Ithaca, N.Y.

"A survey of black raspberry plantings in New York state in 1956 revealed several with leaf symptoms resembling potash deficiency," say the Cornell workers. The chief symptom of potash deficiency is a "scorching" of the leaves. Chemical analyses of leaf samples taken before and after treatment also indicate the potash content of the plant.

A two-year-old planting of Bristol black raspberries showing potash deficiency symptoms was selected for the experiment in 1956. In each of three years, a half pound sulfate of potash was applied to each plant in the treated plots. All plants also received a tenth of a pound of ammonium nitrate each year just before the emergence of flowering shoots. The fertilizers were applied in a 2-ft. wide band on each side of the row.

"Leaves collected before treatments were begun in August 1956 contained 0.5 to 0.7% potassium on a dry weight basis," report the investigators. "Many, but not all plants, also showed a basal leaf scorch which was most obvious in July. The application

of sulfate of potash greatly reduced the amount of basal scorch during 1957 and 1958, while unfertilized plots continued to show much scorching. A soil application of potash in August 1956 increased the leaf content of potash from 0.65 to 1.15% by August of 1957. By 1958 potash treatments had resulted in a 20% increase in yield of fruit, a 25% increase in the number of canes, and a 100% increase in the weight of dormant prunings taken from the treated plots.

★

High nitrogen levels without adequate potash will, over a period of years, increase the hazards of winterkill of coastal Bermudagrass, scientists of the U.S. Department of Agriculture report.

William E. Adams and Marvin Twersky of the USDA's Agricultural Research Service, in cooperation with the Georgia Agricultural Experiment Station, found winterkill of this grass was most severe on plots that had received combinations of high nitrogen fertilization and low potassium for the past three years.

As the amounts of nitrogen increased, winterkill caused progressively more damage—particularly on plots that received no potash fertilization. Excessive nitrogen overstimulates the grass, making it more susceptible to winter injury. Potash is effective in hardening the plant material, counteracting the results of the nitrogen and making the grass more hardy.

Damage to stands of coastal Bermudagrass in the spring of 1958 ranged from 35 to 92%, following a serious winter for plant damage in the Georgia area. The amount of damage depended on the amounts and ratios of nitrogen and potassium applied during the preceding three years. Where no nitrogen had been applied, good stands were maintained regardless of the potash fertilization.

Soil tests showed that high nitrogen fertilization was linked with depletion of soil potassium. Heavy applications of nitrogen resulted in rapid removal of potassium from the soil. This, in turn, increased winterkill of the coastal Bermudagrass.

★

The first three-phased study of the effect of commercial fertilizer on pine trees is being conducted in Dodge County, Ga. on the farm of J. T. Coffee.

Arthur G. Steedley, area conservationist for the U.S. Forest Service, says the effects of fertilizer on gum yield, tree growth and cone production are the three phases under study. There have been previous studies on certain aspects of tree fertilization, but Mr. Steedley says this is the first experiment on all three objectives.

The experiment consists of 25 half-acre plots in a 21-year-old slash pine plantation. Various combinations of fertilizer have been applied to these plots and each one has been repeated five times. Application of fertilizer was made in a way which the average farmer could adopt in the management of his timber stand if the experiment proves profitable.

The experiment is a cooperative venture. Mr. Steedley is responsible for general supervision and weighing of gum, the Nitrogen Division

of Allied Chemical Corp. provides the fertilizer and Carter Martin, county agent, made the soil analysis. The Lake City Research Center of the Southeastern Forest Experiment Station at Lake City, Fla., is responsible for final analysis of results and preparation of technical reports.

The section chosen for this experiment was marked for a selective cupping Naval Stores operation by Mr. Steedley prior to selection of the study plots. Trees marked for this initial cupping consisted mostly of inferior or diseased trees which should be removed in the first thinning after a brief turpentine cycle, it was reported.

★

Tall pines are now growing in research plots where hardwood overstory stems were cut and the bare surface chemically treated before the pine seedlings were planted.

That's the report of F. M. Meade, forester, in charge of the Arkansas Southwest Branch Experiment Station at Hope.

Mr. Meade, who has been experimenting with chemical sprays since 1956, said:

"Pine must have space and sunlight to grow satisfactorily. Under

a hardwood overstory, naturally seeded or planted pine trees either die or grow slowly."

This was the way the experiments were handled:

All hardwood trees 1 in. or more in diameter were subjected to one of five treatments: (1) Lower 13 in. of the bole was basal sprayed with 2,4,5-T; (2) stems were cut and the bare surface was treated with 2,4,5-T; (3) stems were cut or girdled, with no chemical treatment; (4) trees were injected with 2,4,5-T, and (5) trees were given no treatment.

Concentrations of 2,4,5-T used were 1 gal. of the chemical to 24 gal. of diesel fuel for the basal spray and cut surface treatment, 1 gal. of the chemical to 9 gal. of diesel for the tree injections.

The greatest survival and growth of underplanted pine after three growing seasons resulted from cutting the hardwood stems and treating the cut surface with 2,4,5-T.

Mr. Meade said that the hardwood treatment—either basal spraying or injecting—should be done a few weeks before the pine are planted.

The experiments, Mr. Meade said, were designed to test the methods of removing competing overstory and determine how the pines grew.

ALABAMA

(Continued from page 9)

Last year the partners turned 200 tons of nitrogen fertilizer and 700 tons of mixed goods. They had a big volume in cotton insecticides, and also sold slightly more than 3,000 lb. of garden insecticides in small packages.

"Mostly I've talked about things we eliminated to reduce overhead and raise profits," said Mr. Holley. "Right now we have hardly any 'dead' items in the store, and our net profit is somewhat larger than a few years ago. By eliminating some of the free services we have been able to go to a self-service store. We have one store salesmen and two boys who haul and stock materials."

To offset the reduction in these services, the partners added others which do pay off. One of these was in becoming management specialists. Having been in business for nearly 14 years, the two owners know the area well. They realize that small farmers are facing a big obstacle and need help in management.

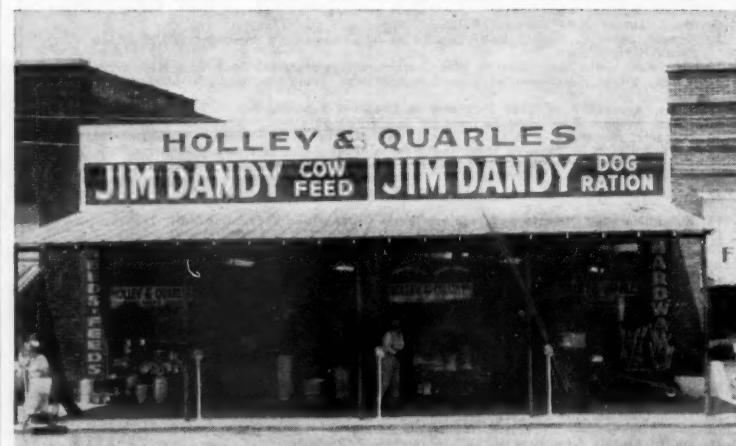
"Sometimes we can sit down with a man and work out a feeding program that will bring him a nice sideline income," Mr. Holley explained. "This may be chickens, or perhaps he needs help in increasing his dairy herd."

The store is a gathering place for farmers when they come to town. The owners are good listeners, and often figure out something to help out when customers start discussing their problems.

To save labor costs, the owners have a large loading porch at the rear. It is the same height as the truck bed, so feed or fertilizer can be rolled out with a wheelbarrow. There is also extra parking space at the rear, and the doors are usually open so customers can use either entrance.

During the insect season, the store buys an 18-ton load of chemicals and pulls it to the rear of the store. The sacks are protected by a tarpaulin at night. By selling direct from the trailer, the store eliminated double handling and adding more storage.

"We've made no radical changes here," said Mr. Holley. "Mostly it's been a case of shifting emphasis on things that pay off, and arbitrarily cutting out things that made us no money. We believe there is a great future in the farm store, but management is the number one problem. A big volume does little good unless each department brings in a profit. That is why we are giving the microscopic treatment to each department and keeping records. And thus far it has been very worthwhile."



FRONT VIEW of Holley & Quarles, Northport, Ala. The owners keep a large display of items on sidewalk at all times. The porch provides protection for both customers and merchandise.



By AL P. NELSON

The shrill whistle of the one a.m. train shrieked through the night, and a short time later the train clanked to a stop in the village. Then a couple of shrill toots again, and more clanking and it was on its way once more.

Oscar and Minnie and practically everyone else in the little country town—except the late tavern visitors—never heard the noise of the midnight train. They had become accustomed to it, just as some men become accustomed to the continual nagging high tones of their wives.

Down the street from the depot, came a stoop-shouldered man of about 65 carrying an old time valise. He wore a battered felt hat and walked with a sort of swing to his figure. He turned in at the neat wooden gate at Oscar and Minnie's prim white house and went up the cement sidewalk to the porch.

The man tried the screen porch door, but it was hooked. Then he doubled his fist and pounded on the wooden frame of the door. It rumbled like thunder. The man listened, but there was no answer.

Finally a light went on inside the house and the white, frightened face of a woman peeked from behind a curtain. It was Minnie, in long flannel nightgown, black hair in a knot atop her head.

She opened the door and peered at the man who stood revealed in the light from the porch bulb. "Oh, Uncle Emil!" she said. "We didn't expect you until tomorrow."

She came out on the porch and unhooked the porch door, and Uncle Emil entered, carrying his old valise.

"Oh, the darn railroad company took off some more passenger trains," he growled, "so I had to come today on a train where my pass was good." Uncle Emil, from Minnie's side of the family, was a retired railroad fireman, and had a pensioned man's pass. "But, by golly, I had to go all the way from Minneapolis to Chicago and then back into Wisconsin—about 200 miles out of my way."

"Why?" she asked. She always asked this question, and Uncle Emil always answered it the same way.

"Because I wanted to ride free on my pass. I wanted to stay on the St. Paul line. Yah, I couda taken a bus cross country, but I ain't got no pass on a bus. I got one on the railroad, so I might as well use it, even if I have to ride a little outta the way. Gotta save money, as Oscar says. By the way, how is the boss? Still smilin' at customers?"

Minnie was nervous. She knew Oscar was lying in bed straining his ears to hear every word. The arrival of the noisy, interfering Uncle Emil was no source of joy to Oscar.

"Oh, he's all right," she said. "He works so hard in the business."

"Oh," said Uncle Emil as though this was news to him. "When I go down to the store, all he's doin' is pushin' some pencils and lookin' for paper clips. That guy Pat—he's the one that works hard night and day, chasin' around for business, callin' on farmers. He's a hustler."

"He's a big spender, that's what he is!" an irate Oscar shouted from the bedroom.

Minnie held her fingers to her lips. "Uncle Emil," she reproved, "don't get him mad."

"Oh, I won't say another word to get him mad. You know me, Minnie. I'm awful easy to get along with." He looked toward the kitchen. "Gee, I'm hungry. Have you got a sand-

OSCAR & PAT

wich for your old uncle, eh? And maybe a little apple sauce? And Coffee? I haven't had much to eat since I left home. Those dining car meals are too rich for my pocket-book." His blue eyes danced as he looked at her.

Nervously Minnie went into the kitchen and turned on her gas stove. She would hear from Oscar about this, for Oscar didn't like Uncle Emil and his ways. But, as she always told Oscar, she was Uncle Emil's favorite niece, and if she was nice to him, maybe someday he would remember her in his will. He was not as thrifty as Oscar, of course, but he was not one to throw money away. And they said he had quite a bit put away—

Well, Oscar could see the logic of such talk.

"Oh, Minnie," Uncle Emil called. "I see you have a 14 inch TV now.

Gee, that old 10 in. used to make my eyes burn. Do they still have all those good Indian and cowboy pictures on down here?"

"I don't know," Minnie said nervously. "We don't watch much. Oscar doesn't like Indian and western pictures."

"Oh, well, he don't have to watch them when I'm here," said Uncle Emil. He took out his handkerchief and blew his nose with a snort like that of a moose getting a stray bullet in his thigh. The sound roared through the house.

After Uncle Emil had disposed of a beef sandwich, pickles, two dishes of apple sauce, two cups of coffee and a piece of cake, he wiped his mouth with the paper napkin Minnie had put down for him. "I feel better now, Minnie. I always said you are a good cook. Is Oscar awake? I think I have a good idea to tell him,

how to sell more fertilizer."

"Oh, no," Minnie said. "He had a hard day at the office. He says there are too many ideas now—from Pat."

"Huh!" Uncle Emil was puzzled. "I thought I could give him an idea and kinda pay for my way while I stay here for four or five weeks. Oscar's good at figures—he's sure got lots of sharp pencils. I'll bet he could do extra business if he would offer to do a farmer's bookkeeping free of charge for him, if he would buy all his fertilizer from the firm. How's that for a humdinger of an idea, eh?"

Minnie looked shocked. "Oh, Oscar does not believe in doing things for nothing, Uncle."

"He don't!" roared Uncle Emil, "then he'd better wise up a little. You gotta do a lot for customers nowadays. If you don't competition beats yuh out. You sure have to butter up people nowadays if you want to sell or—"

"It's long past bedtime, Uncle," Minnie interrupted nervously. "We can visit tomorrow."

Uncle Emil grinned, showing a missing tooth. "Oh, all right. Minnie, how about breakfast in bed for me—the first morning, eh? Gosh I like that."

Books on Fertilizers And Their Use

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PLANT REGULATORS IN AGRICULTURE

Dr. Harold B. Tukey

Published September, 1954. A text book giving background material for county agents, farmers, citrus growers, nurserymen, gardeners; providing fundamentals and general principles; covers encouragement of roots by plant regulators, control of flowering and fruit setting, parthenocarpy, abscission, prevention of preharvest fruit drop, delaying foliation and blossoming, maturing and ripening, inhibition of sprouting and weed control. Brings together specialized knowledge of 17 authorities in the field, with two chapters written by Dr. Tukey, head of department of horticulture at Michigan State College. 269 pages. \$6.50

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Gilbeart H. Collings

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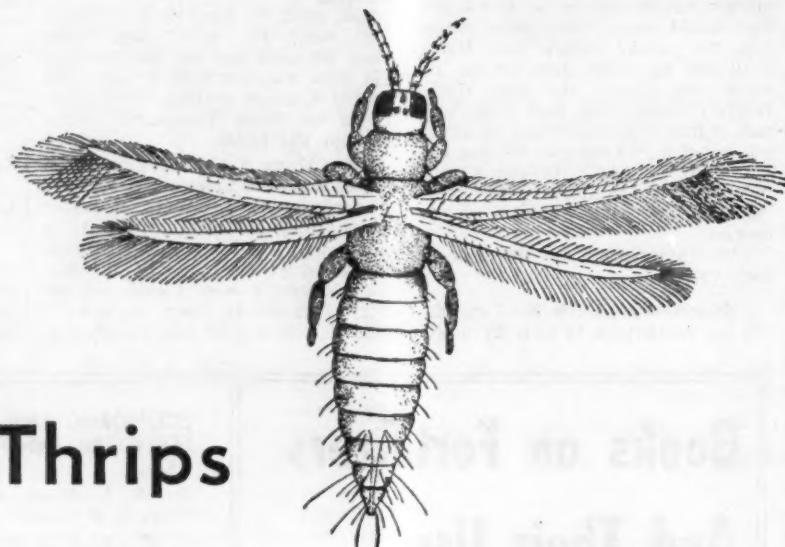
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BUG OF THE WEEK



Thrips

How to Identify

Thrips are small insects, rarely as long as an eighth inch. They feed on the sap of various plants. Many thrips have four wings which are laid back over the abdomen when at rest. The wings are narrow and are fringed with long hairs, which account for the name of the order, Thysanoptera, which means "bristle wings." The foot of the thrips is peculiar, having no claws, but only hooflike depressions surrounding a small bladder.

Habits of the Thrips

Eggs are laid on the tissues of various plants as a rule, although in some species of thrips, eggs are inserted into slits in the plants. Habits vary somewhat with the species of thrips. Gladiolus thrips, for instance, overwinter and may reproduce on the stored gladiolus corms. During the growing season, the larvae and adults attack the foliage and flowers of the growing plant. In the summer, a generation of the thrips may be completed in 2 weeks. Onion thrips pass the winter in the north in both adult and larval stages, on onion plants left in the fields, and in the crowns of alfalfa and clover. The female lays her small whitish eggs in the more slender tissues of leaves. These eggs hatch in from 4 to 10 days. The larvae begin eating as soon as they are hatched, pass through two stages while feeding upon the plants and complete their growth in about five days. They then enter the soil where they pupate. The pupal stage lasts about four days under favorable conditions. A generation thus is completed

in about 2 weeks. Generations overlap and all stages may be found in fields during the summer.

Damage Done by Thrips

Thrips damage a wide variety of flowers and crops, including onions, tobacco, citrus and cotton. They pierce the skin of young plants and then suck the sap, leaving malformed seedlings. In cotton, they punch holes in the cells of new cotton leaves and prevent full growth. The tobacco thrips mars leaves used for cigar wrappers and also injures seedling peanuts, causing many to die. The gladiolus thrips ruins flowers and foliage of growing plants. Plant viruses are known to occur in the order Thysanoptera, which includes thrips. The insect gets the virus from a diseased plant, then moves to a healthy plant and infects it during the feeding process.

Control of Thrips

Recommendations for control materials, timing, application practices, dosages, etc., may vary widely in different states and sections of the country. It is therefore difficult here to attempt to give specific suggestions as to what materials should be used or how they should be applied. Local authorities such as county agents, state experiment station entomologists, and manufacturers of the various pesticides should be consulted for specific information. Labels on pesticide containers carry full instructions on use and dosages. Users should always be urged to study labels carefully before applying any insecticide on food or feed crops to avoid the risk of illegal residues at harvest time.

WILDLIFE

(Continued from page 1)

be clearly demonstrated. It believes that the measures adopted for such control should be those which entail least danger to all forms of life other than the specific pest toward which control is directed. It solicits the assistance and cooperation of the chemical industry in accomplishing this objective," he added.

Charles H. Callison, conservation director of the National Wildlife Federation emphasized in his talk the importance of protecting wildlife since the various areas of wilderness, scenic resources and natural habitat for birds and animals provide recreational facilities for millions of people in the U.S. He declared that this consideration is an important one, and the "bureaucrat or scientist who thinks he can write off a kill of wildlife caused by an insecticide as a matter of no importance, is making a grave political mistake."

As example No. 1, Mr. Callison cited the fire ant program in Alabama. Most of the trouble, he indicated, lay in the "inherent inability of a government organization to admit an error." He said that reports made by the U.S. Department of Agriculture concerning the fire ant program and wildlife losses were distorted and full of inaccuracies. No single person should be held responsible for the USDA report, Mr. Callison said, but was the result of making the report conform to policy. "A government bureau can, when confronted with a threat to its appropriations, completely distort the facts," the speaker declared.

"When a sober history is written of government and private pioneering with chemicals as biotic controls, the fire ant program probably will go down as the classic example of how not to initiate an insect-control operation," he observed.

Charles Lincoln, head of the department of entomology, University of Arkansas, reported on the situation in the delta area of Arkansas where cotton fields have been subjected to heavy treatment with insecticides for the past several years. Despite this, he said, there has been practically no effect on the over-all fauna.

However, there are some problems involved. Over a 10 year period during which intensive applications of insecticides were made, studies have shown that predator bugs are reduced in number by as much as 50% by a single application. Similar reductions are often experienced in adjacent untreated fields, he said, presumably from predator migration rather than from insecticide drift.

"Outbreaks of spider mites, aphids, and bollworms frequently result from insecticides killing their predators," Mr. Lincoln said. "In Arkansas our recommendations lay great stress on avoiding all unnecessary applications. It is not necessary to maintain a field completely free of pest insects to produce a full crop of cotton. By avoiding early season applications whenever possible, we get maximum mileage from predators and avoid a lot of trouble from mites, aphids, and bollworms."

"A field of seedling cotton is virtually free of most insect species. Insects move to cotton from other plants or, less frequently, from hibernation. Legumes, weeds, and small grains are important sources of predators.

"Does virtual eradication of many species in cotton fields affect the over-all population? No. We have detected no long-term population trends chargeable to insecticide usage. Effects within the year in treated fields are drastic but not from year to year or for the area as a whole. This applies to pest species as well as predators," he said.

"Many species of predatory insects are not resident in cotton fields.

Dragon flies, robber flies, and nest-provisioning wasps breed elsewhere. Adults visit cotton fields in search of prey. Some of them are undoubtedly killed at the time of application, but they continue to work cotton fields in numbers throughout the period of heaviest insecticide usage."

Fishing is almost a universal pastime in the delta, the speaker said, but insecticide kill of fish sometimes occurs in farm ponds and reservoirs—from careless flying or from dumping of spray materials. "General losses in lakes and rivers have not been observed. The over-all losses of fish have been minimal and there has been no great demand for curtailing the use of insecticides.

"The delta continues to afford excellent hunting of quail, dove, duck, rabbit, squirrel, and deer. I can personally attest to this. Death losses of

game birds and animals are rarely reported."

Clarence H. Hoffmann, assistant director of the entomology research division of the Agricultural Research Service, USDA, told the conventioners that the matter of insecticide damage to wildlife is of great importance and merits close examination. "However," he said, "I am sure that many of the claims (of wildlife damage) could not be substantiated. Some were based on animal kills in areas that had been sprayed, but there was no definite proof of insecticides being the cause. Others were based on kills in experimental areas purposely treated at dosages greater than those required or recommended for insect control."

Mr. Hoffmann said that entomologists responsible for insect recommendations and users of insecticides are cognizant of the problem and desire to do everything possible to avoid or alleviate any detrimental effects to fish and wildlife. They welcome research to make an objective ap-

praisal of dangers likely to be encountered under actual conditions of use.

"However, entomologists, representatives of the agricultural chemical industry, and users of insecticides have been disturbed by the many scare stories that have been released with the hope of arousing the public to stop the general use of insecticides or specific control or eradication programs, including those decreed by the Congress. I doubt that persons making such claims have complete knowledge of the research that precedes most programs and of the many factors considered before new insecticides are recommended for public use or large-scale pest-control programs are undertaken. The hazard to wildlife is always considered," he added.

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FERTILIZER

(Continued from page 1)

official headquarters of the organization.

A new member of the executive committee is Robert Guntter, Topeka, Kansas.

In his address, the outgoing president cited these 10 objectives:

(1) All state offices should gather and compile state and county totals on fertilizer use twice annually.

(2) We need to protect the interests of commercial fertilizer manufacturers and their customers from unlawful custom mixing and blending.

(3) The plant food industry must step up research on production to counteract such problems as the tremendous loss of nitrogen through improper or unsatisfactory granulation procedures.

(4) Chemists must conform to standardized procedures from one state to the next as, for example, in the Magruder check sample program.

(5) Industry must improve on quality of its products to avoid such problems as having to over-formulate in order to meet labeling requirements and having a variation of chemical analysis from one bag to another.

(6) We must study the basic facts behind segregation of various particle sizes and shapes at different points in the manufacturing and distributing procedure; sampling must be sought at several points along the way.

(7) The Association of Official Agricultural Chemists must be urged to move fast to keep up with new and better analytical methods.

(8) We must investigate the possibility of changing the name of the association to conform with the meaning of "plant food" rather than just "fertilizer."

(9) The association must work to unencumber expressions of "phosphorus" and "potassium" by dropping oxides or hydrides from the names, changing to elemental guarantees.

(10) The AAFCO should look into the question of meeting at some other time and place during the year to help avoid the conflict and the lengthiness of the chemical control meeting schedule in Washington each year.

"With the advent of new materials and uses plus broader use of electronic instruments in experimentation, we should work for only one method for each chemical procedure," Mr. Quackenbush concluded. "We need the support of both industry and government."

In-plant shrinkage is one of the most troublesome problems now facing producers of fertilizers, Dale C. Kieffer, chief production official with the Smith-Douglass Co., Inc., Norfolk, Va., told the meeting. In the simpler, early days of processing a 2% loss of material value was about standard, but the advent of granulation, for example, has heightened ammonia losses initially to as much as 10 to 12%. Improvements in production methods have taken place and this loss record is considerably less, Mr. Kieffer observed, but further work must be done to bring the ammonia disappearance down to the old level.

More concentrated forms of fertilizer and the ammoniation of higher grades have caused industry to look for new ways of preventing losses. The speaker believed that many medium-sized plants are spending as much money on dust collecting equipment now as they invested in their complete plant in the pre-war period. In addition to dust collectors, the industry is resorting to deliberate over-formulation.

The trend to automatic weighing and packing also has intensified the responsibilities of production people. This new automatic equipment is

highly satisfactory if kept in good repair and maintained on an accurate basis.

Mr. Kieffer made some preliminary observations on results found by the NPFI committee on material losses. While the reports are not yet official, the speaker listed several observations:

- (1) The continuous ammoniator is extensively used as a granulator.
- (2) Shrinkages tend to be less in plants where batch mixers are in use.
- (3) Plus or minus 8 oz. seems to be the range of weight variation with automatic packing equipment.
- (4) Dust losses average in the range of 5-10%.

A report on the NPFI Chemical Control Research Project was given by Dr. A. J. Duncan, Johns Hopkins University, Baltimore. The comprehensive survey to determine the variations in results of sampling fertilizer grades among laboratories, techniques and instruments has been underway for over a year. The official results will be available in the near future, Dr. Duncan said, but some of the more important conclusions are as follows:

(1) In the case of the 8-16-16 granulated fertilizer, the Archer tube picked up a higher percent nitrogen than the single and double tubes. Similar biases were not demonstrated for the other fertilizers.

(2) There was little evidence that the men using the sampling instrument had any effect on the results.

(3) There was evidence that samples taken by instruments showed a higher percent potash than samples obtained by riffling. This was true for both the 5-10-10 powdered fertilizer and the 8-16-16 granulated.

(4) The manufacturer appears to have considerably over-formulated for phosphorus and potash, but not for nitrogen.

(5) There is little evidence that samples taken from the same bag by instruments differ more on the average than samples obtained from the same bag by riffling.

(6) Relative bias between laboratories existed that were greater than any biases between sampling instruments.

(7) There were significant differences between batches of tests run by the same laboratory.

(8) Summary of some net components relating to bag-to-bag variations, within bag sampling variations, and test error.

(9) A hypothetical build-up of tolerances is presented.

(10) If the bagging operations could be brought "under control" (i.e., segregation effects eliminated), the bag-to-bag standard deviations could be considerably reduced.

The use of electronic computing equipment for compiling tonnage and analytical reports in state control offices was urged by M. B. Rowe of the Virginia Department of Agriculture, Richmond, and R. C. Crooks, Florida Department of Agriculture, Tallahassee. The speakers pointed out the speed and accuracy of the system and the fact that state agricultural colleges and agencies as well as private industry appreciate information derived from their use. It was observed that 17 state control offices use IBM card punching equipment and record tonnage reports as well as chemical analyses by this method.

"During the peak of the season we were from 60 to 90 days behind on getting analytical records out," Mr. Crooks said. "Now we are able to supply this information in a week at the busiest time of the year."

CONTROL OFFICIALS RESOLUTION

WASHINGTON—The following resolution was passed at the recent meeting of the American Association of Pesticide Control Officials at the Shoreham Hotel here:

WHEREAS the American Association of Pesticide Control Officials has since its beginning supported and promoted uniformity of the regulation of pesticides between states and between states and the Federal Government; and

WHEREAS the Federal Insecticide, Fungicide, and Rodenticide Act was amended on August 7, this year, to include nematocides, plant regulators, defoliants, and desiccants, as defined therein; and

WHEREAS many states now regulate these materials under their existing statutes; therefore

BE IT RESOLVED that this Association recommends that all states whose existing statutes do not include these materials, initiate efforts toward the amendment of those statutes to bring them into closer conformity with the model law and the Federal Statute, and to reflect therein these new classes of materials.

PESTICIDE

(Continued from page 1)

dent of the AAPCO, W. C. Geagley, Lansing, Mich., asked if the association is aware of the responsibilities which go with the passage of the new amendment. "We should begin to work immediately with industry in an effort to understand all the implications and ramifications that will beset the manufacturer of these products and the regulatory officials in enforcement," he said.

Registration of any pesticide product, with a clear declaration of the active ingredients and direction for its use, is only the beginning of our problem, Mr. Geagley declared. When this association was started we did not realize the almost endless pest population, nor the variety, the overlapping and changing environmental conditions which effect eradication and control. From this beginning we must clearly chart a future course which will be serving the public in a manner that is expected of us, he added.

Quantities of residues remaining on products for human and animal feeds constitute the most serious problem confronting the pesticide user, Mr. Geagley said. Obviously poisonous or toxic quantities of residues should not be tolerated under any circumstances, unless it can be established that the amounts are safe.

Government and state officials, as well as educational institutions and manufacturers should strive to better inform users of the proper pesticide usages and the hazards involved, he declared. These considerations are defined in the Food and Drug Act.

In addition, the Miller amendment is at work as a safeguard for the public. Also, there is the Delaney amendment and all its implications, the speaker pointed out. This becomes involved with pesticide chemicals and their uses, he said. Are we fully prepared for this?

To take up the subject of developments in pesticide control under the FDA, the meeting heard a report from F. J. McFarland, assistant to the director, FDA Bureau of Biological and Physical Sciences. The speaker pointed out that in the five years under the Miller Amendment 2,100 tolerances or exemptions have been established for 104 pesticide chemicals. Also 42 out of 220 petitions for tolerances or exemptions either could not be filed or after filing and scientific review it was found that only zero tolerances could be established.

Mr. McFarland reviewed findings from tests with some toxicants which resulted in the setting of zero tolerances. He reminded that the pesticide amendment requires the petitioner to describe the analytical methods by which determination of residues were made. "Before we can conclude a tolerance will be safe, we must be sure that we have a means of enforcing such a tolerance," he said. More attention is being given now to methods tryout and methods to

identify and measure residues at tolerance levels, he went on.

Concerning pesticide residues in meat and milk, Mr. McFarland said that although tolerances for DDT, methoxychlor, toxaphene and malathion in meat were established to provide for use of these pesticides for certain forage uses or spray applications to the meat animal, no tolerance has been established to permit any pesticide residue in milk.

"Because we believe that it would be unsafe to establish a tolerance on a raw agricultural commodity which would result in by-products bearing residues which would, in turn, result in illegal residues in meat or milk, we have required that, for tolerances for pesticides on apples, citrus, cottonseed and other raw agricultural products also used for feed, evidence be presented to show no residues in milk or meat. Where the residues in the feed by-products exceed those permitted in the raw agricultural commodity, a tolerance for the feed must be established under the feed additive procedure," he said.

As to pesticides and antibiotics in milk, improper use of fly sprays and failure to withhold milk from cows treated with penicillin for mastitis according to label instructions are main sources of contamination, he said. The FDA presently is preparing to take regulatory action against milk and milk products moving in interstate commerce which are thus contaminated.

In commenting on microbial pesticides, Mr. McFarland said that a feeding study with human volunteers is essential to provide conclusive evidence of the pathogenicity of such micro-organisms as the proposed pesticide, *Bacillus thuringiensis* Berliner.

The AAPCO elected J. D. Patterson, Salem, Ore., as its new president, and E. R. Winterle, Tallahassee, Fla., vice president. A. B. Heagy, College Park, Md., was reelected secretary-treasurer.

Members of the executive committee in addition to the officers are R. A. Moncrief, Georgia; R. H. Guntter, Kansas; Justus C. Ward, Federal government, Washington, D.C.; M. E. Christensen, Utah, and the past president, Mr. Geagley.

Farm Fertilizers Buys Assets of Iowa Company

OMAHA, NEB.—Farm Fertilizers, Inc., Omaha, has recently acquired all of the real estate and physical assets of the Agricultural Products Corp., Webster City, Iowa, according to an announcement by Richard E. Bennett, president.

Mr. Bennett said that his firm will operate the Webster City facilities as a branch of Farm Fertilizers, Inc. Additional facilities are being installed at the Iowa location in order to serve dealers in that area more efficiently.

Farm Fertilizers, Inc., recently announced also the purchase of General Fertilizer Co. of Fremont, Neb.

Stored Pesticide Warning Issued by State Officials

LEXINGTON, KY.—With winter approaching and crops being harvested, the Kentucky Agricultural Experiment Station observes, the use of pesticides is diminishing and pesticide dealers are beginning to store their hold-over pesticides for the winter. Dealers are urged to plan to store these materials so that they will not contaminate food, feed or fertilizer, the station reminds.

"Dealers should also caution any customers who may have pesticides that they intend to carry over to next year regarding the storage of such materials. They should impress upon the customer that pesticides are toxic materials and, as such, special care should be exercised in handling and storing them. One act of carelessness can cause financial losses as well as grief. If a farmer has a pesticide from which the label has been lost or one in a container other than its original container, he should destroy it. Never keep a pesticide that does not have a clearly legible label attached because any such products are potentially dangerous."

The following are some suggestions for safe storage:

NEW LOOK

(Continued from page 7)

where we would be today if we had listened to that just 19 years ago. The best way today to stop the steady march toward fulfillment of the American Dream would be to pull the rein on research and education. This we must never do.

We talk a lot in America about horsepower. However, our greatest national resource today is brainpower. This complex scientific and social environment in which we live demands increasingly competent men and women to manage it effectively. We must develop the brainpower of young America in such a way that the generation ahead can enjoy fully the technological and social developments which await us. Not to train to its highest capacity the brainpower of our young men and women in America is just as wasteful of one of our great natural resources as not to exploit a new pit or iron ore, a new bed of uranium, or our fertile fields.

Those of us in adult educational work must not be frightened by the economic and sociological changes which agriculture is undergoing.

Change is the law of progress. The challenge which faces us is to direct the change along constructive and beneficial channels.

Our problem, therefore, becomes one of intelligent analysis and direction of the future—not cowering fear of it.

None of us would want to live under the economic institutions which prevailed just a short 20 years ago. Yet I am confident that some of us in this room, 20 years ago, vigorously resisted changes which were then occurring in the patterns of production, processing, and distribution. As we look back now, we wonder why.

Likewise, 20 years from now we'll look back on 1958 and be a little amused that we were so fearful of change, rather than directing our energies toward channeling change down beneficial pathways.

It has been said that the proponents of the "status quo" are often the villains of history.

Those who resist inevitable change frequently perish in the process.

Those who manage our agricultural production, processing, and distribution firms are challenged to give intelligent direction to the changes ahead, so that our great food and fiber industry will function even better than now.

The future belongs to those who prepare for it.

1. Be sure that the caps are tightened securely on all bottles and cans of liquid pesticide. Destroy leaky containers.

2. Do not store weed killers close to material such as wettable powders and dusts. Since some weed killers, such as 2,4-D and 2,4,5-T, are highly volatile substances, they can contaminate other materials.

3. Store wettable powders, dusts, and granules of pesticide products in a cool, dry place.

4. Do not store liquid pesticide products where the temperature will fall below 40 degrees. Too low temperatures may result in a breakdown of liquid materials, and, if the liquid should freeze, there is a danger that glass containers will break.

5. Do not carry over any pesticide products whose label is lost or obliterated.

6. Above all keep poisonous materials in a locked room or cabinet and out of reach of children and animals.

Carolinas-Virginia Group Tell Annual Meeting Plans

RALEIGH, N.C.—The annual meeting of the Carolinas-Virginia Pesticide Formulators Assn., Inc., will be held at the Carolina Hotel in Pinehurst, N.C., on Dec. 1-2, announced Frank S. Reid, president.

Featured speakers will be H. C. Edwards, executive vice president of the North Carolina Farm Bureau Federation, Inc., who will talk on "Some of the Problems Facing the Southern Farmer," and L. Y. Ballantine, commissioner of agriculture in North Carolina, who will talk on "Significant Agricultural Trends in the Southeast."

Dr. H. D. Tate, Naugatuck Chemical Division, U.S. Rubber Co.; Roy R. Bennett, agronomy extension specialist, and J. M. Moseley, assistant to the vice president of the American

Tobacco Co., will discuss "M.H. 30 and Tobacco Sucker Control."

Other talks will be on "Soil and Grain Insecticides," "New Developments in Weed Control on Cropped Land" and "Marketing Trends," Mr. Reid said.

The banquet speaker will be Sam Bundy, Farmville, N.C.

DuPont Announces New West Coast Representative

WILMINGTON, DEL.—The DuPont Co. has announced the appointment of George E. Miner to the newly created position of West Coast representative for DuPont garden products.

In his new post, Mr. Miner will coordinate sales programs and provide technical information to DuPont distributors, agents and dealers, according to Howard A. Weibel, manager of the company's garden products section. Mr. Miner will make his headquarters in the Los Angeles area.

You'll get a better understanding of the fertilizer market from this valuable new book



Crop-Use Patterns of Fertilizer in the United States

by
J. R. ADAMS L. B. NELSON D. B. IBACH
U.S. DEPARTMENT OF AGRICULTURE

This significant report was compiled by the U.S. Department of Agriculture after thorough studies of fertilizer use in the United States. Crop-Use Patterns covers questions which, until now, have not been adequately answered. Crop-Use Patterns is based on information gathered from every fifth farm surveyed in the most recent U.S. Census . . . providing a broad base of national information.

Some of the questions answered are:

- what portions of croplands receive fertilizer
- how fertilizer is used among major crops
- how much acreage for each crop is fertilized

Specific fertilizer uses analyzed are:

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Oats	Cotton	Potatoes
All Crops and Cropland Pasture		
Hay and Cropland Pasture		

All graphically presented with 33 maps and numerous charts. You'll want your own personal copy of Crop-Use Patterns. And you'll want to keep it handy where you can easily refer to its wealth of practical information about the use of fertilizer. To obtain your copy of Crop-Use Patterns, fill in and mail the coupon below . . . the supply is limited.

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NAC MEETING

(Continued from page 1)

future," he said, "we will need adequate statistics more than ever before." He recommended that the in-



PRICE TRENDS—As part of his report to the NAC Assn., Jackson V. Vernon, NAC president, presented the above chart showing comparative price trends of items used by farmers, 1949-1958. Items listed in descending order are: Farm machinery, wage rates, motor vehicles, building and fencing materials, fertilizer, lead arsenate, calcium arsenate, 2,4-D, DDT, parathion, and BHC.

dustry make a determined effort to resolve the problem in the shortest possible time.

Marketing Problems

The marketing and sales of pesticides was the subject covered in a talk by Robert S. Thompson, president of Thompson-Hayward Chemical Co., Kansas City, Mo. He said that the function of formulators and basic distributors of agricultural chemical products in the U.S. is an important one. "I am more convinced than ever that the position of the strong local or regional formulator and distributor has much potential in the future," he declared. "In spite of the rapid change in marketing emphasis, sales through formulator-distributors have generally kept pace with total sales of pesticides."

Mr. Thompson expressed doubt that there is any area of the chemical industry where the strong local or regional organization fits better into the marketing scheme than in the distribution of these chemical products. "I believe that strong local formulator-distributors will always be able to give better service than their national and larger competitors. They are closer to the market and are flexible enough to meet changing demands rapidly. Such well-managed and aggressive organizations will always be important factors," he added.

Four major patterns of distribution of pesticides are beginning to take shape at the present time, he said. These were described as follows:

1. Starting with the basic material, the basic manufacturer sells to local formulators as well as to regional and national formulators, who in turn mix the active pesticide chemical with carriers, diluents and other materials to produce a usable pesticide product. The formulator then sells through either one or two resellers in one or two steps to the farmer.

2. Under the second pattern the basic manufacturer produces the basic chemical, formulates and sells the finished product through formulator-distributor outlets—national, regional and local. These outlets in turn resell directly to dealers who service the farmer. This pattern now applies primarily to pesticides of specialized or limited market potential or during introductory marketing stages of a new pesticide but will become a more important marketing method in the future.

3. Under the third method the national formulator or integrated producer not only manufactures the basic material but also formulates the finished product. This organization then distributes this finished product

through national field selling staffs, all too often by-passing the local or regional formulator-distributor, going direct to customers in the field.

4. A variation of the third method is known as "line or in-line selling." The basic or integrated producer with a protected or patented position not only sells the product in final form, but also sells technical material and sometimes the formulated product to his national formulator competitors. Such sales, often made on a preferred basis, are ostensibly to round out the competitor's basic lines, but often lead to "footballing" of the product in the field.

"It is my opinion that the really successful local or regional formulator today must also be a jobber or distributor of proprietary specialty pesticides which are produced, manufactured and formulated by basic chemical manufacturers. Thus the term — 'formulator-distributor,'" he explained.

"I believe that the formulator-distributor organization which has the foresight to build a versatile and active sales group, combined with the establishment of sound business practices, will succeed regardless of whether we have one step selling or two step selling to the ultimate consumer, the farmer. In my own opinion, as our farms become larger and more specialized, and as professional agricultural production units appear, the reseller directly servicing these larger farms and production units will be the logical outlet for our pesticides. As strong formulator-distributors, we will supply these resellers. I do not agree that a strong local and active dealer should be, or will be, completely bypassed in the future," he concluded.

Louis F. Czufin, advertising manager of California Spray-Chemical Corp., Richmond, Cal., made a comparison of the advertising efforts of the agricultural chemical trade with those of the farm machinery industry. He cited figures from one midwestern farm paper in which the makers of chemical products for the farm used a total of only 36 advertising pages in all of 1958, while the makers of farm machinery, remedy, feed, and feed supplements advertised to the tune of 462 pages, nearly half of which was for farm machinery.

More Effort Needed

Mr. Czufin pointed out that the chemical trade is in its growth stage and thus it is necessary to make a greater investment in advertising and promotion than that of a well-established "accepted" industry. "We should look at the tremendous opportunity any agricultural chemical company has to move in and dominate any market that it chooses with powerful advertising and promotion. With an average of only 1.2 pages per company per year, a consistent program of say 12 to 18 pages a year of advertising for any well-coordinated company would practically assure

market domination," he said.

The advertising man told of a recent study made on a large-scale farmer in Pennsylvania, who has 2,256 acres and 22 men to do the field work. This operation raises poultry, hogs, beef cattle, milk, eggs. Upon being interviewed, here is what the grower gave as a "shopping list" for his farm needs. Mr. Czufin said. This farmer estimated that he would buy in 1960, the following: 25,000 gallons of gasoline; 13 tractors, combines, cultivators, barn cleaners; 200 tons of fertilizer, 3 tons of salt and minerals. He will buy antibiotics, seed, pipe, pumps, trucks and incidentally 100 tires. Nowhere on this list do we see a mention of anticipated purchases of agricultural chemicals of any kind.

"Here we feel is a striking example of the need for our industry to develop the market and the potential. We must think of advertising and promotion expenditures in terms of cultivating the market and spending market development dollars. Until our business falls into the 'accepted practice' category, we must spend advertising money not only to sell but also to educate," he concluded.

Speaker at an all-convention luncheon Wednesday was Dr. Earl L. Butz, dean of the school of agriculture, Purdue University, Lafayette, Ind. "Agriculture is changing from a way of living to a way of making a living," he told the assembly. "It is changing from a business of arts and crafts to a business undergirded with large amounts of science and technology," he continued, explaining that the present agricultural revolution, resting on basic science and closely allied with the widespread advance of automation in both production and distribution, "is threatening the traditional pattern of owner-manager-operator in a single person. This is the very basis of much of today's social and political unrest in agriculture."

A new agriculture in America is "emerging with breathtaking rapidity," he said. "The transformation is taking place so quickly that we are experiencing great difficulty in adjusting to it economically, sociologically, and politically."

Keep Research Going

Looking ahead to the job that must be done for the future, Dean Butz declared that we must all combat the philosophy that asserts that because of agricultural surpluses "we should declare a moratorium on research and education."

"This is a false and dangerous doctrine," he said, pointing out the dire consequences that such a philosophy would have produced today if applied 25 years ago.

"Those who manage our agricultural production, processing, and distributing firms are challenged to give intelligent direction to the changes ahead, so that our great food and fiber industry will function even better than now," concluded Dean Butz.

Ways in which the National Agricultural Chemicals Assn. aids the industry in matters of legislation, public relations, traffic, and technical

and legal affairs, were discussed by members of a panel moderated by Lea S. Hitchner, executive secretary of NAC.

Participating in the panel were: Louis G. Gemmell, Geigy Agricultural Chemicals, Ardsley, N.Y., chairman of the NAC legislative committee; Arthur Northwood, Jr., Shell Chemical Corp., New York, chairman of the NAC public relations committee; George L. Wilson, Jr., Rohm & Haas Co., Philadelphia; George T. Scriba, Union Carbide Chemicals Corp., New York, chairman of the NAC lawyers committee, and F. Ray Barron, Jr., American Cyanamid Co., New York, secretary of the NAC technical advisory committee.

Mr. Gemmell presented a report of legislative activities in a number of states in which laws were being considered concerning pesticide labeling and distribution, and gave the convention figures on amounts spent to contact state legislatures in order to present the industry's viewpoint.

Mr. Northwood's talk reviewed the pro and con battles over the use of pesticides in mass applications, stating that the pace has been stepped up during the past year with the pesticide foes trying to strengthen their positions by every means available. He warned that the situation is not one to pass over lightly, that fear and prejudice on the part of many faddist groups are difficult to combat. He presented a chart delineating the various organizations "for" and "against" the industry's activities and warned that the battle lines are being drawn. (See editorial, page 22.)

A plea for additional funds was made by Mr. Northwood to counteract some of the propaganda appearing everywhere against pesticides.

Mr. Wilson described how his committee has been working for a number of improvements in freight classifications and rates for pesticidal materials. Among these benefits are the ability to ship on a uniform basis for either rails or trucks and obtaining favorable freight descriptions and classifications on materials.

Mr. Scriba described the discussions carried out in meetings of attorneys representing the NAC and indicated that the group is keeping abreast of all developments concerned with legal matters.

Mr. Barron likewise reported on the activities of his technical advisory committee, stating that the NAC Regulatory Action Committee (NACRAC) has had an unusually important role to play during the past year.

World Pesticide Picture

Dr. Charles E. Palm, dean of the college of agriculture, Cornell University, Ithaca, N.Y., reported on his observations of pest control activities on a world-wide scale, based on his recent round-the-world trip.

He stressed the importance of education in strengthening agriculture throughout the world, and observed that some of the backward countries are now beginning to see the value of modern technology, including chemical products. When we become impatient with the older countries in adopting late practices, we should not forget that agriculture in the U.S. has made its phenomenal growth in a relatively few years. The past century has seen practically all the modern advances come into being. As an example, he reminded that the science of entomology observed its first 100 years in 1953.

The idea of land grant colleges, once unique in the U.S., is now spreading to other lands, he said. However, progress is slow. Whereas some \$300 million a year is spent in the U.S. for agricultural research, some countries have practically no research programs at all. However, contribution of dollars alone may not be enough to raise agricultural standards in some countries, Dr. Palm said. The exporting of American know-how

NAC ELECTS OFFICERS

FRENCH LICK, IND.—Jack V. Vernon, vice president, Food Machinery and Chemical Corp., New York, N.Y., and George R. Ferguson, president, Geigy Agricultural Chemicals, division of Geigy Chemical Corp., Yonkers, N.Y., were elected president and vice president, respectively, of the National Agricultural Chemicals Assn. at the group's 26th annual meeting at the French Lick-Sheraton Hotel.

Mr. Vernon was unanimously elected to serve as president for a third consecutive term. Dr. Ferguson, NAC's newly elected vice president, has been a member of the board of directors since 1958.

Also reelected for another year were Lea S. Hitchner, executive secretary and treasurer, and Miss Lee H. Grob, assistant treasurer.

Members of the association also named three new members to its board of directors at the French Lick meeting. The three thus honored are John A. Field, vice president, marketing, Union Carbide Chemicals Co., New York; Paul Mayfield, vice president, Hercules Powder Co., Wilmington, Del.; and Herbert F. Tomasek, president, Chemagro Corp., Kansas City, Mo.

and the exchange of technicians creates better understanding on both sides. "We have learned a great deal about other peoples, their customs and their knowledge levels," the Cornell dean said. "We know that they have problems in understanding us and our ways, just as we can't always understand them and their attitudes."

Dr. Palm praised the work of the Food and Agriculture Organization of the U.N. for bringing nations together to fight common enemies such as locusts and other insect pests. The Ford and Rockefeller Foundations have also made a considerable contribution in this manner, he said. The policy of training natives to carry on rather than having American technicians remain in a country was cited as being desirable. This "pump priming" plan has worked particularly well in Mexico, Dr. Palm said, but is also proving helpful in other parts of the world.

Bolstering agriculture in backward lands has large political overtones, the speaker said. "The free world will survive only with the people of Southeast Asia pulling themselves through and finding ways to raise enough to feed themselves. We can't talk democracy to starving people," the dean said. There is no progress possible in a subsistence type of agriculture. It is up to us to give them a new philosophy, new hope, new friendship.

Education is the key to the entire world situation, Dr. Palm said. "You can't impose new ideas on an economy based on the bullock plow and water buffalo in rice paddies, without a program of education," he added. Patience is necessary, however, since the process cannot be hurried.

The final portion of the meeting was devoted to two papers concerned with the 1959 amendment to the Federal Insecticide, Fungicide, and Rodenticide Act and other federal legislation. Presenting papers in this portion of the program were Justus C. Ward, chief, pesticides regulation branch, Agricultural Research Service, USDA, Washington, and Joseph A. Noone, technical adviser for the NAC.

Mr. Ward discussed provisions of the 1959 law which increases the coverage of the Federal Insecticide, Fungicide, and Rodenticide Act to include nematocides, plant regulators, desiccants, and defoliants. He outlined some of the things that the new law will do, and reminded that it requires registration of products used to control nematodes, to modify plant growth, to defoliate plants or to desiccate plant tissues.

"Such registration will automatically permit the registrant to petition for tolerances under the Pesticide Chemicals Amendment to the Federal Food, Drug, and Cosmetic Act (PL 518). This technicality may have far-reaching significance insofar as simplifying the procedures to be followed in obtaining the clearances needed to justify the use of the chemicals on food crops," he said.

"It is possible that obtaining tolerances for plant regulators will be complicated by the fact that they are 'systemics' and also for desiccants and defoliants because they will leave quite high residues due to their use close to harvest. Even with these problems, however, the industry has had years of experience in obtaining tolerances under the Pesticide Chemicals Amendment and the details and the problems to be solved are familiar.

"Since the safety of any residue left on a food must now be proven before the use can be accepted, it is important that the principles and tests used to evaluate all agricultural chemicals be as uniform as possible. This will be assured insofar as raw agricultural commodities are concerned, when the chemicals are all covered by the Federal Insecticide, Fungicide, and Rodenticide Act, and

are subject to the provisions of PL 518.

Provisions of New Law

"So, from the viewpoint of the obvious impact of the new law on industry, there are only two vital factors to remember:

(1) "Nematocides, plant regulators, desiccants, and defoliants must be registered.

(2) "Tolerances on raw agricultural commodities must be obtained through the provisions of the Pesticide Chemicals Amendment in all cases where residues are found to be present on food."

The immediate enforcement of this new law is somewhat involved, because of the timing features it carries, he said. To bring this law into direct line with the Food Additives Amendment to the Federal Food, Drug, and Cosmetic Act, the following limits are set:

(1) Where the use of a nematocide, plant regulator, desiccant or defoliant leaves a residue on a food, and that pesticide was in commercial use prior to Jan. 1, 1958, the enforcement features of the law shall be applicable on March 5, 1960, or such later date not beyond March 5, 1961, as the secretary may prescribe, or on the date of registration, whichever date first occurs.

(2) Where the use does not result in residues and the pesticide was in commercial use prior to Aug. 7, 1959 (date of enactment), the enforcement features shall also be applicable, as outlined above.

Mr. Noone discussed further the effective date provisions of the new amendment, commenting that the dates of March 5, 1960 and March 5, 1961 remain because legislative and regulatory personnel involved were reluctant to extend the time since a time schedule had already been set for the products involved under the Food Additives Amendment.

Here is a rundown of the effective date provisions as presented by Mr. Noone:

Effective Dates

For all practical purposes, nematocides, plant regulators, defoliants or desiccants whose use does not result in residues in or on food, marketed commercially prior to Aug. 7, 1959, are not made subject to the detailed requirements of the Federal Insecticide, Fungicide, and Rodenticide Act until March 5, 1960 or such later date, not beyond March 5, 1961 as the secretary of agriculture may prescribe.

However, if the product is registered under the Act prior to that time, it then becomes fully subject to the Act. Any nematocide, plant regulator, defoliant or desiccant which was marketed commercially for the first time after Aug. 7, 1959 is already subject to the Act and must be registered.

Nematocides, plant regulators, defoliants and desiccants whose use DOES result in residues remaining in or on raw agricultural commodities at the time of harvest, are regarded differently. An important consideration with these products is not only when the product was first marketed but when specific uses of the product were first commercially established.

If a particular use of a nematocide, plant regulator, defoliant or desiccant had commercial application prior to Jan. 1, 1958, for all practical purposes, that use is not subject to the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act or the Miller Amendment until March 5, 1960 or such later date or dates, not beyond March 5, 1961.

If, however, a particular use of one of these products results in residues in or on raw agricultural commodities and was commercially established after Jan. 1, 1958, that use is already subject to the provisions of the Insecticide Act and the Miller Amend-

ment.

Any new products introduced since

Jan. 1, 1958 and whose use would result in residues in or on raw agricultural commodities, are now subject to those two Acts. There has been no basic change in their regulated status except that they are now under the Federal Insecticide Act and the Miller Amendment rather than under the Food Additives Amendment.

Mr. Noone pointed out some "definite benefits" to the industry as a result of this enactment. "For example," he said, "nematocides, plant regulators, defoliants and desiccants whose use results in residues in or on raw agricultural commodities are removed from the jurisdiction of the Food Additives Amendment and are made subject to the same laws as previously applied to pesticides. Thus, a uniform system of regulatory control at the federal level is established for all these agricultural chemicals.

The Amendment also serves as a model or pattern for the states to follow. Prior to the Amendment, some states were regulating or proposing to regulate defoliants, desiccants, and/or plant regulators under their fertilizer laws or under special laws. This diverse pattern of state control posed serious and, in some cases, insurmountable difficulties for companies which were trying to market such products on a nation-wide basis. The regulatory officials of several states have already indicated their intentions of following the federal pattern and thereby eliminating the duplications and conflicts."

As an entertainment feature at the annual banquet Thursday night, Dan C. Anderson, General Chemical Division, Allied Chemical Corp., Dallas, Texas, put on a "chemical magic" act in which he discussed, in humorous vein, chemical terminology and formulas.

Dr. Roger Roth, Velsicol Chemical Corp., Chicago, was chairman of the general convention committee. Committee members included James W. Starrett, Monsanto Chemical Co., St. Louis, Mo., and Dr. Richard H. Wellman, Union Carbide Chemicals Co., New York.

South Carolina Plant Food Society Schedules Meeting

CLEMSON, S.C.—The 10th annual meeting of the South Carolina Plant Food Educational Society has been scheduled for the Clemson House, S.C. on Nov. 9, it was announced.

Featured banquet speaker will be Burnett R. Maybank, lieutenant governor of South Carolina.

Other highlights of the day will include discussions on South Carolina's intensified soil fertility program.

Agronomy Society Meeting to Feature Top Science Speakers

MADISON, WIS.—Two top U.S. scientists will highlight the speaker's roster for the 52nd annual meeting of the American Society of Agronomy to be held in Cincinnati, Nov. 16-20.

A. G. Norman, professor of botany and director of the radiation laboratory at the University of Michigan, will discuss "Application and Problems of Radiation and Radioisotopes in Agriculture."

S. G. Stephens, the Wm. Neal Reynolds Distinguished Professor of Genetics at North Carolina State College, will talk on "Species Differentiation in Relation to Crop Improvement."

A full schedule of meetings have been established for the five-day affair.

Nebraska Agricultural Chemical Institute Formed

LINCOLN, NEB.—At a recent meeting, the Nebraska Agricultural Chemical Institute was formed.

The objectives of this association are "to procure and disseminate useful knowledge and information pertaining to the scientific development of agriculture and to promote better understanding, cooperation and a high standard of ethics among all persons interested in agricultural chemical distribution."

Elected to the presidency of the new group is Howard Peterson, Lincoln Service & Supply, Inc., Grand Island, Neb. Farrell Higbee, Brown Farm Chemical Co., Scottsbluff, Neb. was elected vice president and William L. Munroe, Farm & Home Services, Inc., Kearney, Neb. was elected secretary.

Also elected to the board were Ted Doyle, National Fertilizer Co., Fairbury, Neb.; Max Mason, Thompson-Hayward Chemical Co., Omaha, Neb., and Arlen Anderson, Crystal Chemical Co., Inc., South Sioux City, Neb.

BANQUET SPEAKER

WASHINGTON—Dr. Vannevar Bush, scientist, educator, author and industrialist, will be the banquet speaker on Nov. 24 for the Ninth Semi-Annual Meeting and Midyear Conference of the Manufacturing Chemists' Assn. The all-day session will be held at the Statler Hilton Hotel in New York City. More than 1,000 chemical industry executives are expected to attend.



VISIT PLANT—Members of the recent California Fertilizer Industry Tour and School, attended by some 50 bankers and professional farm managers, made a stop at the Hercules Powder Co. plant, Hercules, Cal. Dr. Richard B. Bahme, regional director for the Institute, who arranged the Institute-sponsored tour, stands in center. Others (left to right) are Gordon Dudley (with metal hat), acid supervisor, Hercules Powder Co. plant; Don Allison, senior technical representative, Hercules Powder Co., San Francisco; Mr. Bahme; Fred S. Orth, assistant vice president, Bank of America, San Francisco, and J. J. Cannon, agricultural loan section, vice president, Bank of America, San Francisco.

Croplife

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Southern states.

Control Program Indicated . . .

More Funds Needed to Offset Efforts of Anti-Pesticide Faddists Throughout U.S.

NOW THAT THE hysteria has subsided in connection with the recent outbreak of encephalitis in parts of New Jersey, the situation may be reviewed in calmer retrospect than was possible at the height of the outbreak.

The disease caused some 20 deaths, according to reports from the area, although not all of these have been proved to result from the disease. Its spread was finally stopped by a determined effort on the part of state and local officials to kill the fresh water mosquitoes known to transmit the disease. We are happy to report the situation is now well in hand and no very recent cases of the disease have been noted.

There is more significance to the New Jersey mosquito operation than one would ordinarily attribute to such an enterprise. This case involves some classic considerations. It is an occasion where citizens had an opportunity to weigh their dread of catching a serious disease against their fear of allowing pesticides to be applied in the community. Also entering into the conflict was the consideration of the safety of wildlife in the area. The possibility of harming some birds or animals in the process of killing disease-bearing mosquitoes was accepted as a calculated risk. Of much more importance was the protection of human health and the saving of lives threatened by encephalitis.

Thus pesticides emerge in a heroic manner as life savers rather than as villains. The question is, however, will these people who so eagerly sought relief from mosquitoes, soon forget the benefits of pesticides and once more join the ranks of the scornful?

Plenty of pressure is being brought to bear on the public to outlaw use of pesticides on many fronts. Thousands of dollars from well-heeled private citizens are reported to have been contributed to the anti-pesticide cause, and many of these groups are well-organized and continually recruit new believers to their camp.

The positive side is more difficult to put across, as a rule, since a certain portion of the public is apparently eager to find things to be AGAINST. The food faddist finds the pesticide bogey a logical addition to his other pet peeves and goes about spreading scare stories with great zeal.

However, it seems to many in the trade that situations like the recent one in New Jersey might bring a sobering realization to many misguided folks. The fact that encephalitis is spread by mosquitoes is only part of the story. The remainder is that one of the basic carriers is the pheasant, which furnishes the mosquito with the virus which the insect transmits to humans. Horses, too, are susceptible to the disease, but they cannot transmit the disease to humans nor to other horses, according to Dr. Edwin L. Brower, director of the division of animal industry of the New Jersey Department of Agriculture. He explained the process in this manner:

"Encephalomyelitis is carried by mosquitoes and can only be contracted through the bite of a mosquito which has first bitten an infected wild bird. While both humans and horses may become victims of the disease, infection cannot be transmitted from one to the other, either directly or by mosquitoes. Federal livestock officials have reported that the concentration of the virus recovered from infected horses is so dilute that the disease cannot be transmitted to humans or other horses."

Our wish is that the role of pesticides in this

instance might be publicized more widely than it probably will be.

A note of encouragement, however, was heard in the recent meeting of the National Agricultural Chemicals Assn. at French Lick, Ind. Arthur Northwood, chairman of the association's public relations committee, indicated that more action is likely to be forthcoming from the pesticide trade in combatting unfavorable attitudes toward the



CHART PRESENTED by Mr. Northwood at NAC meeting. At left are groups potentially or actively against pesticide use, and at right those favorable or potentially so. In the middle, of course, is the pesticide industry itself.

use of its materials. In a talk before the convention, he pictured the situation in a realistic manner, declaring that much more can and should be done to offset the downward pull of the detractors.

The very fact that the industry is stirring in this direction is encouraging. The story to be told about the value of pesticides, properly used, is a most convincing one. It takes thought, planning, effort and funds to accomplish this end. Sometimes a circumstance may be used to advantage. Perhaps the recent disease outbreak in New Jersey may serve toward this end. But the world needs to be told about it.

Billion in Pesticides by '75?

THAT THE PESTICIDE business for 1959 will probably top the \$265 million mark set last year, was predicted by Jack Vernon, vice president of Food Machinery & Chemical Corp. and president of the National Agricultural Chemicals Assn. at the latter's annual meeting recently. Mr. Vernon based his statement on available information pertaining to the 1959 season, and reiterated his statement made a year ago that the pesticide industry by 1975, would see sales of at least \$1 billion.

The industry is growing in both size and importance to the agricultural economy. In fact, its influence is being felt over a much broader base than ever before. Its role in maintaining public health by control of disease-carrying insects; its contribution toward control of weeds; and the marks it has made in the improvement of fruits and vegetables all point toward more business ahead.

Moreover, Mr. Vernon said, the profit picture is likely to improve along with the volume . . . a circumstance long desired by the trade. Profits for 1959 appear to be somewhat improved over those of 1958, he said.

To reach the \$1 billion mark in fifteen years will mean an increase of over three times that of today's sales figures, but an accelerated trend is under way and should continue to snowball during the next several years.

Once the current growing pains are overcome and the true worth of pesticides is established in the minds of farmers everywhere, a great upsurge in use is almost inevitable.

But in the meantime, there is work to be done. The \$1 billion mark in 15 years is not an impossible objective if the industry plays its cards wisely.



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CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographic regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for this controlled distribution Croplife subscription rate is \$5 for one year (\$8 a year outside the U.S.). Single copy price, 25¢.

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EXECUTIVE AND EDITORIAL OFFICES — 2501 Wayzata Blvd., Minneapolis, Minn. Tel. Franklin 4-5200. Bell System Teletype Service at Minneapolis (MP 179), Kansas City (KC 295), Chicago (CG 340), New York (NY 1-2452), Washington, D.C. (WA 82).

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MEETING MEMOS



Nov. 17-18-20 — Dealer-Sales Meetings, sponsored by the Rocky Mountain Plant Food Assn., Nov. 17, Greeley, Colo.; Nov. 18, Pueblo, Colo., and Nov. 20, Grand Junction, Colo.

Nov. 24 — Ninth Semi-Annual Meeting and Midyear Conference, Manufacturing Chemists' Assn., Statler Hilton Hotel, New York.

Dec. 7-8 — Minnesota Soil Short Course, University of Minnesota Institute of Agriculture, St. Paul, Minn.

Dec. 8 — Minnesota Fertilizer Industry Assn. meeting, University of Minnesota Institute of Agriculture, St. Paul, Minn.

Dec. 8-10 — District Fertilizer Dealers and Lime Producers Schools, Dec. 8, Green Bay, Wis., Beaumont Hotel; Dec. 9, Eau Claire, Wis., Eau Claire Hotel, and Dec. 10, Madison, Wis., Wisconsin Center Building, sponsored by the Soils Department, College of Agriculture, University of Wisconsin.

Dec. 10-11 — Michigan State University Fertilizer Conference, Kellogg Center, East Lansing, Mich.

Dec. 11 — Ohio Fertilizer and Lime Conference, conference theatre, Ohio Union, Ohio State University, Columbus, Ohio.

1960

Jan. 25 — Wisconsin Lime and Fertilizer Day, University of Wisconsin campus, Madison, Wis.

Jan. 26-27 — South Dakota Fertilizer Dealers Short Course, South Dakota State College, Brookings, S.D.

Feb. 22-25 — Weed Society of America meeting, in conjunction with Western Weed Conference, Cosmopolitan Hotel, Denver, Colo.

Meeting Memos listed above are being listed in this department this week for the first time.

Nov. 3-4 — Michigan Insecticide-Fungicide Conference, Michigan State University, East Lansing, Mich.

Nov. 4-5 — Fifth Annual Oklahoma Fertilizer Dealers and Crops and Soils Conference, Stillwater, Okla.

Nov. 4-6 — Fertilizer Industry Round Table, Mayflower Hotel, Washington, D.C. Dr. Vincent Sauchelli, National Plant Food Institute, chairman.

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Jan. 13-14 — Pesticide School, North Carolina State College, Raleigh, N.C.

Jan. 13-15 — Ninth Annual Convention, Agricultural Ammonia Institute, Statler Hilton Hotel, Dallas, Texas.

Jan. 14-16 — 10th Annual Convention of the Agricultural Aircraft Assn., El Mirador Hotel, Palm Springs, Cal.

Jan. 20-21 — North West Agricultural Chemicals Industry Conference, Benson Hotel, Portland, Ore., C. O. Barnard, executive secretary.

Jan. 20-22 — Thirteenth Annual Southern Weed Conference, Buena Vista Hotel, Biloxi, Miss.

Jan. 21 — Northeast Region, National Plant Food Institute fertilizer sales promotion workshop, Hotel Hershey, Hershey, Pa.

Jan. 25-26 — Second Annual Agricultural Pesticide Conference, Purdue University, Lafayette, Ind.

Jan. 25-27 — Cotton States Branch, Entomological Society of America, DeSoto Hotel, Savannah, Ga.

Jan. 27-29 — Symposium on Chemistry of Phosphate-Soil Reactions, Muscle Shoals, Ala.

Jan. 28-29 — Annual meeting of the Colorado Agricultural Chemicals Assn., Cosmopolitan Hotel, Denver, Colo.

Feb. 2-4 — Pest Control Operators' School, North Carolina State College, Raleigh, N.C.

Feb. 8-9 — Southwestern Branch, Entomological Society of America, Hilton Hotel, El Paso, Texas.

Feb. 11-12 — Midwest Agronomists-Fertilizer Industry meeting, Edgewater Beach Hotel, Chicago, Ill.

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